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ON

ABSCESS OF THE BRAIN:

ITS PATHOLOGY, DIAGNOSIS, AND TREATMENT.

Delivered at the Royal College of Surgeons of England on Feb. 3rd, 1928,

BY E. MILES ATKINSON, M.B., B.S. LOND.,
FELLOW OF THE COLLEGE; ASSISTANT SURGEON, THROAT AND EAR DEPARTMENT, ROYAL UNITED HOSPITAL, BATH.

THE subject of brain abscess is so large that I propose to limit consideration to the common type of case which arises secondarily and adjacent to a focus of infection in the skull—that is to say, mainly to otogenic brain abscesses.

On examination of the literature it is found that any exact description of the general pathology is lacking. Thus Sir William Macewen suggests that an abscess may originate by infection through direct continuity of tissue or by perivascular paths. Preysing reported in 1901 a case which arose from retrograde thrombophlebitis, a report which appears to have been largely responsible for Eagleton's recent elaboration of this mode of infection. But there is no information as to exactly how the infection enters the brain substance or where the abscess starts. Consideration of a few points in the anatomy and physiology of the brain will help in elucidating the problem.

ANATOMY.

The Vessels.—The blood-supply of the brain comes from the circle of Willis by two types of vessel: (1) central branches which pass directly into the base of the brain to supply the central nuclei and the main mass of white matter; (2) cortical branches which pass over the surface, and into the fissures, ultimately dividing into two varieties of terminal branches: (*a*) a large number of short branches which supply the grey matter of the cortex only, and (*b*) a smaller number of longer branches which pass through the cortex to supply a thin layer of subjacent white matter. These are all end-arteries, with no anastomosis between the central and cortical branches, so that there lies just below the cortex and between the terminations of the cortical and central vessels a flat sheet of white matter which is a relatively avascular zone. This zone is present both in the cerebrum and in the cerebellum, but owing to the greater complexity of the cerebellar convolutions its position in the latter is somewhat different. It corresponds to the centre of the white core of each cerebellar folium, which is supplied from either side by the cortical branches, the central vessels supplying the central white matter only. Thus the avascular zone is present in both parts of the brain, but altered in position because of the greater convolution of the cerebellum. It is in this zone, owing to the poor blood-supply, that brain abscesses originate.

The Membranes.—The cortical vessels lying in the subarachnoid space carry down with them into the fissures a sheath of endothelial cells derived on the vessel side from the pia-arachnoid, and on the brain side from the pia mater, the lumen of this sheath being in connexion with the subarachnoid space. These spaces between vessel and brain substance are known as the perivascular, or Virchow Robin, spaces of the brain, and take the place of lymphatics.

Circulation of Cerebro-spinal Fluid.—These perivascular spaces contain cerebro-spinal fluid which arises, according to Mestrezat,[1] as a filtrate through the walls of the choroid plexus and of all the capillaries of the brain, spinal cord, and meninges. It is poured out into these spaces and normally flows outwards along them towards the surface to be absorbed by the arachnoidal villi and the Pacchionian bodies. But Weed[2] has shown that under pathological conditions, where the pressure of the fluid in the subarachnoid space is increased, the direction of flow in the perivascular spaces may be reversed. Infection consequently can be carried down them from the subarachnoid space, and so into the brain substance. In these two facts, the presence of an avascular zone and the reversed flow of cerebro-spinal fluid in the perivascular spaces, we have the basis of the pathology.

PATHOLOGY OF ADJACENT BRAIN ABSCESS.

The osteitis caused by the original infection in the skull gradually spreads until it reaches the dura, causing a pachymeningitis, with or without the presence of an extradural abscess. This area of pachymeningitis induces a subjacent leptomeningitis, so that adhesions are formed between the membranes and the surface of the brain, shutting off the infected area from the main subarachnoid space, just as occurs around a focus of infection in the peritoneal cavity. From this area of localised meningitis infection passes on into the brain substance by one of three routes—perivascular, venous, or arterial.

The Perivascular Route.

This path was originally put forward as a possibility by Macewen, and is, despite statements to the contrary (Eagleton [3]), by far the most common. Evidence of it was found in 13 out of 16 specimens examined (82 per cent.). The process can best be studied in the cerebellum. Sections of the earliest stage show the pial vessels patent, but their surrounding perivascular sheath distended by a gross infiltration of inflammatory cells, mainly mononuclear, and adherent to, and in places incorporated by granulation tissue with, the cortex. This infiltration passes down with the vessels into the fissure against the normal stream of cerebro-spinal fluid, owing to the local increase of pressure. The attack upon the brain is of an extremely localised nature, marked pathological change, as evidenced by œdema and new vessel formation, occurring in one lobule only. Fig. 1 shows a section of a later stage. A small abscess is seen situated accurately in the centre of the white core of one folium, with surrounding inflammatory changes similar to those already described. This is the situation of the abscess which is to be expected from anatomical considerations, in the position of poorest blood-supply, the avascular zone in the centre of the folium. It is impossible, except by chance, to obtain such an early specimen of a cerebral abscess, because, while cerebellar abscesses extend backwards, leaving their point of origin more or less intact, a cerebral abscess extends in all directions around, so that its exact point of origin cannot be demonstrated. But by analogy it seems highly probable that the same thing occurs in the cerebrum as in the cerebellum, the abscess starting in the first place in the avascular zone close beneath the cortex.

The Venous Route.

Infection by this route was found only in two specimens out of 16 (12 per cent.), although according to Eagleton [3] this is the common path. It occurs in the cerebellum usually as a result of the spread backwards of a lateral sinus thrombosis through the pial veins, while in the cerebrum it may be the result of a pial vein being caught up in adhesions and thus infected, so that retrograde thrombophlebitis takes place (Preysing [4]). The histological appearances are characteristic. A section of such a case shows a large pial vein containing breaking-down clot, while the arteries are patent. The vessels in the fissure show the same changes, thrombosis of the vein and patency of the artery. There is a surrounding perivasculitis of mild degree, much less than that which occurs in cases of infection by the perivascular route and due to the infected clot in the vein. Further, the inflammatory cells are of a different type, in this case being polymorphonuclear, as against the mainly mononuclear infiltration of perivascular infections. Infection has entered by a fissure, but the perivascular sheath, though adherent, is not so closely incorporated with the cortex as in the previous group, nor is the

inflammation of the cortex of so marked a degree. Fig. 2 shows the extension of the process. The lobule drained by the veins running into the thrombosed pial vessels is degenerating from interference with its blood-supply—note the veins in the fissures, patent, but distended with blood. This interference is sufficient to cause changes even in the well-nourished cortex, but produces its maximum effect at the point of least vascularity, therefore in the avascular zone. Thus one finds again the development of the abscess in the centre of the white core of the lobule, in precisely the same position as that in which the abscess originated in the previous group. One characteristic feature of thrombotic cases is scattered patches of hæmorrhage which occur in the tissue around the abscess, due to the rupture of small capillaries from over-distension. The abscess once formed extends in a different direction from those of perivascular origin. There the cortex is preserved intact owing to its good blood-supply, and the abscess extends backwards through the centre of the infected lobule. Here, however, the cortex is damaged and extension follows the course of the thrombosis—that is to say, outwards towards the surface, and in doing so destroys the cortex. In these cases the abscess is therefore more likely to track to the surface and burst into the subarachnoid space, causing a generalised meningitis.

The Arterial Route.

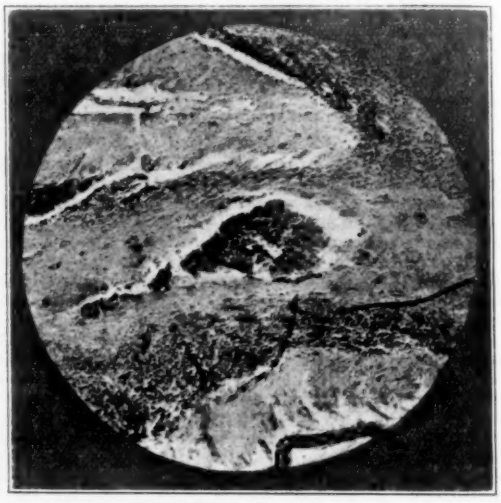
This, as regards adjacent brain abscess, is the rarest of the three routes, and occurred in only one specimen out of 16 (6 per cent.). Infection of the artery happens again by its involvement in adhesions, its retention close to the infected bone area and consequent arteritis and thrombosis. If before the lumen of the artery is completely occluded a portion of the clot is swept off, and infarction occurs deeper in the brain, the event is signalised by the abrupt onset of symptoms—apoplectiform, convulsive, or paralytic. Fig. 3 shows the condition in such a case. A thrombosed artery is seen with on either side a vein beginning to thrombose. The cortex around shows very little change apart from hæmorrhage, and this lack of cortical involvement, which is seen also in thrombotic cases before the abscess approaches the surface, is characteristic of a vascular as against a perivascular origin. Similarly, the white matter in the region of the abscess shows little abnormality owing to the sudden onset of the process which prevents the mobilisation of any defensive force. Further away from the abscess cavity a slight venous dilatation is noticeable, but the veins are not engorged with blood nor are there patches of hæmorrhage as in the previous group. This is what would be expected from occlusion of an artery, the tissues being depleted of blood rather than engorged.

THE CAPSULE.

Infection having proceeded to the stage of pus-formation this pus is contained within an abscess cavity, to whose wall the term "capsule" has been applied in the literature. The choice of this word is unfortunate, for it has served only to produce confusion of thought as to the real nature of the limiting membrane. It is in no sense a true capsule as the term is applied to the tissue surrounding a tumour, and is nothing more than the ordinary wall of an abscess cavity, such as occurs in any part of the body, differing in histological structure only in so far as the supporting tissue of the brain differs from that in other parts. The term capsule presumably originated from the fact that at operation, or on section of the brain at post-mortem, the wall of a chronic abscess stands out rather sharply from the surrounding soft tissue of the brain by reason of the presence in it of a certain amount of fibrous tissue. But the fact that a special name has been applied to this wall, suggesting that the pathological process is something peculiar to an abscess in the brain as distinct from an abscess in other parts of the body, has led to a mass of literature accumulating upon the subject of encapsuled and non-encapsuled abscesses, both in relation to their pathology and treatment.

There is in reality nothing peculiar about the capsule. It represents simply the expression of an attempt upon the part of the brain to wall off and limit the

FIG. 1.



Abscess developed accurately in centre of white matter, forming centre of lobule. Well away from central mass of white matter. Inflammatory changes in both layers of cortex; perivasculitis in fissures.

spread of infection. In the chronic cases with infection of low virulence the wall of the cavity will be found to consist mainly of fibrous tissue of greater or lesser thickness according to the chronicity of the case, and with a consequent variability in the degree of neuroglial hyperplasia. Internal to this is a layer of characteristic cerebral granulation tissue—viz., capillaries contained in a supporting tissue of endothelial cells, leucocytes, neuroglial cells, and fibroblasts—while external to the fibrous tissue layer is an encephalitis of variable degree and extent, in chronic cases mild and limited.

In the subacute cases, the most common type, where the infection is of moderate severity, the essential three layers are still found, though modified. The inner layer of granulation tissue is thicker and more apparent; the middle layer is less definite, containing comparatively little fibrous tissue, but many neuroglial cells, while the surrounding encephalitis is more marked and more extensive.

Finally, in the acute abscess, the result either of a vascular catastrophe or of a fulminating infection, there has been no time for the development of any protective mechanism, and no evidence of a limiting pyogenic membrane is found. The contents of the cavity consist of necrotic brain tissue, and a wall of acutely inflamed cerebral tissue, which extends more or less widely according to the severity of the infection. This is the non-encapsuled abscess of the books and is rather an acute spreading encephalitis with tissue necrosis than a true abscess.

Direction of Spread.—As the abscess gets larger it extends in a definite direction. In the cerebrum it increases in size at the expense of the white matter, the cortex, by reason of its good blood-supply, being protected until quite late. Extension, though taking place to some extent in all directions, in the main follows the course of the vessels, inwards towards the lateral ventricle, into which the abscess may ultimately perforate. The more acute the process the more likely is it to perforate the ventricular wall, whereas in chronic cases the choroid plexus tends to become adherent in the region of threatened perforation and

so prevent its occurrence, acting in the same way as the omentum in the peritoneal cavity. In the untreated case the cortex also will ultimately become involved until only a thin layer of tissue composed of thickened pia and the outermost part of the cortex intervenes between the abscess and the meninges. Eventually, if the patient survives, the cortex may be perforated with the formation of a fistula, so that the abscess discharges spontaneously to the surface, so-called "abscess with stalk."

In the cerebellum extension again occurs at the expense of the white matter, but in this case, of the

FIG. 2.

Abscess in white matter of lobule, extending through cortex to surface along course of thrombosed vessels. Cortex otherwise little affected except for tiny capillary haemorrhages not well seen in photograph. Veins thrombosed, arteries patent, perivasculitis slight.

white matter forming the core of the lobule, the central mass at first being involved only to a minor degree. The process starts from the anterior end of the cerebellum, picks out one particular lobule, and spreads backwards through that lobule, to which it tends to remain confined. Adjacent lobules are pushed aside and involved only secondarily in the inflammatory process as the size of the abscess increases. It is important to note that the central mass of white matter is not usually destroyed to any great extent; that the abscess itself generally does not approach at all close to the central cerebellar nuclei, in particular the dentate, hence localising signs will be absent unless these nuclei are involved by the surrounding encephalitis; and further, that the shape of the actual abscess is usually ovoid with smooth walls, and not irregular as postulated by some authorities, and stated by Eagleton to be the cause of the difficulty in drainage.

BACTERIOLOGY.

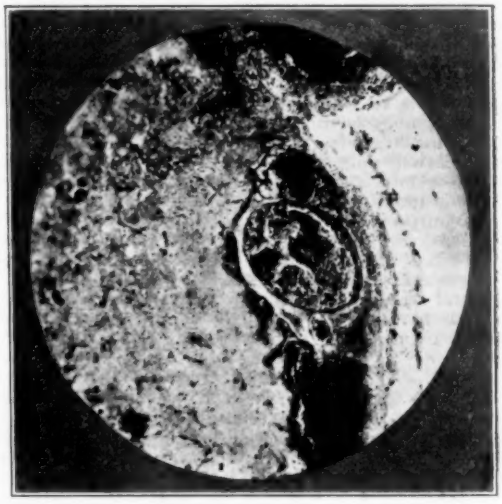
The bacteriology of these cases has been very inadequately worked out, and the results of investigation in the series of cases upon which this lecture is based have not served to throw any further light upon it. Much more work requires to be done before it will be possible to assess the relative pathogenicity of the different organisms found in cerebral abscesses. Lund, of Copenhagen,[5] has produced some evidence which seems to show that in chronic cases the *Bacillus coli communis*, either alone or in conjunction with other organisms, is highly virulent, and that in acute cases the pneumococcus is the organism of which to beware. My own investigations in a very small series (14 cases only) tend to confirm the former observation, though not the latter. It is stated that an anaerobic infection is common, and usually fatal, but sound evidence for this statement is lacking.

REGIONAL PATHOLOGY.

Little needs to be said about the regional pathology of *cerebral abscesses*. Those in the temporal lobe are of otogenic origin, commence in the inferior temporal convolution and spread upwards through the middle, and superior convolutions, and may even become so large as to extend to the neighbouring occipital and parietal lobes, which are otherwise usually involved only by direct infection such as wounds, or by metastatic abscesses. Those in the frontal lobe are secondary to a nasal accessory sinusitis, frontal or ethmoid, and show a high mortality owing to the smallness of the lobe, consequent early perforation of the ventricle, and mechanical difficulties of drainage. In connexion with frontal lobe abscess, it is of interest to mention that cases of brain abscess associated with bronchiectasis, usually considered to be of metastatic origin, are often in the frontal lobe. Adam [6] has suggested, and cited cases in support of his contention, that the real cause in many instances of both pulmonary and cerebral conditions is an unsuspected nasal sinusitis.

Cerebellar abscesses are more complicated as regards route of infection. Like temporal lobe abscesses, they are secondary to infection in the ear, and may be either labyrinthogenic or non-labyrinthogenic. If the former, infection may pass back to the cerebellum commonly by bone necrosis, less often by pre-formed ways, of which there are four: the internal auditory canal, the aqueduct of the cochlea, the ductus endolymphaticus, and the hiatus subarcuatus. Infection by way of the first two more usually results in a

FIG. 3.



Thrombosed artery, two accompanying veins incompletely thrombosed, in wall of abscess. Surrounding acute encephalitis; no evidence of a "capsule."

generalised meningitis; by way of the last is uncommon; which leaves the third, the ductus endolymphaticus, as the usual route in this group. Infection along this route may lead to a cerebellar abscess by formation of a saccus empyema, or by erosion of the bony wall of the aqueduct and the intermediate formation of an extradural abscess. Suppurative labyrinthitis, extradural abscess, and cerebellar abscess are a common triad. If the labyrinth is not involved the route of infection is through the posterior antral wall, either direct through Trautmann's triangle to the dura of the posterior fossa, or more commonly to the lateral sinus and thence to the cerebellum, in either case with or without the

intermediate formation of an extra-dural abscess. Infection having reached the cerebellum enters its substance by way of one of the main fissures, usually either the great horizontal or the fissure below, and this for anatomical reasons. The saccus endolymphaticus lies in relation to the inferior lip of the great horizontal fissure, while the knee of the lateral sinus lies actually on the fissure and turns downwards over the postero-inferior lobule. These being two common routes of infection, it would appear that the postero-inferior lobule is the one most likely to be involved by the cerebellar abscess, and this has in fact been found to be the case in the present series.

DIAGNOSIS.

Discussion of diagnosis will here be limited to the early and less generally recognised signs. The value of early diagnosis as a prelude to successful treatment is as great in this as in other morbid conditions, but the signs generally described are not early, being, on the contrary, rather late manifestations. Continuous severe headache, vomiting of cerebral type, papilloedema, persistent subnormal temperature and pulse—these, when they are present, are the signs not of an abscess, but of increased intracranial pressure, and therefore, if caused by an abscess, of one either of large size and long standing, or of one surrounded by a considerable area of encephalitis. This increased intracranial pressure has a markedly deleterious effect upon the resistance to infection of the brain substance, and to await its onset before making a diagnosis is materially to diminish the patient's chance of recovery. Again, the well-known localising signs—contralateral paresis and aphasia in temporal lobe abscess; nystagmus, pointing errors and disturbances of muscular tone and coördination characteristic of cerebellar cases—are also evidence of a large abscess or of surrounding encephalitis, both conditions which impair prognosis. The cases which offer the best prospect of recovery are those in which the abscess is of recent development and still small, or is caused by an organism of low virulence so that tissue reaction is good, the abscess wall definite, and the surrounding encephalitis minimal. It is precisely in such cases that diagnosis is most difficult, for until they have attained a large size, these are silent abscesses whose presence will only be suspected by the accumulation and correlation of a number of small and inconspicuous manifestations.

For purposes of description the clinical course of a brain abscess is commonly divided into four stages: the stage of onset, the latent stage, the manifest stage of increased pressure and localising signs, and the terminal stage. With the two latter, the late stages, we have here no concern. It is the importance of the first two stages that I wish to emphasise.

The Stage of Onset.

This is a transient affair of a few days or less, and is characterised by an initial feeling of chilliness, possibly even a rigor, headache, some rise of temperature, and nausea or vomiting. These symptoms are the result of the extension of the inflammatory process from the focus of infection in the skull to the pia mater, causing a circumscribed cortical encephalitis. They are, of course, common to the onset of many diseases, but when they are associated with an adjacent focus of infection such as an acute, or more especially a flaring or grumbling chronic, suppurative otitis media, they should at least suggest the possibility of something more serious than merely an attack of "influenza." In some cases, especially in children and in those of vascular origin, a "fit" is the first sign and may occur suddenly when the patient is apparently well. With an associated suppurative focus this onset of convulsions is stated by Eagleton, and in my experience rightly, always to indicate an intracranial extension, and is the expression of a cortical instability due to irritation from without or to involvement by a process within the brain. An extradural abscess may be sufficient cause. I have seen a case in which an extradural abscess from a frontal sinusitis in a man of 29 was heralded by generalised convulsions, and in which cure resulted from simple drainage of the abscess. This is the exception. More often an intracerebral cause must be sought, and the type of fit may give an indication of its situation. A lesion in the temporal lobe results in convulsions of a generalised type, frequently followed by some degree of contralateral paresis. In the frontal lobe they are also generalised, but may start with a conjugate deviation of the head and eyes, while in the parietal lobe they are of Jacksonian type. In cerebellar lesions fits are not characteristic and are a late phenomenon. The following case of the sudden onset of convulsions well illustrates the importance of a due appreciation of this sign.

The patient was a small girl of 2½ who, one month after the onset of a right acute suppurative otitis media following measles, had a generalised convulsion lasting one and a quarter hours, in which twitching of the left side of face and body occurred. When the child recovered consciousness she was drowsy and fretful and had a slight left hemiparesis, which improved during the day and was scarcely detectable after 24 hours. No other signs of an intracranial lesion apart from some drowsiness could be found. The original diagnosis of a right temporo-sphenoidal abscess was overruled by the opinion of a physician and a second aurist, but it was decided to operate on the right mastoid. This was found to be widely infected, but a small area of dura exposed looked healthy and pulsated normally so that no exploration of the brain was undertaken. The patient's condition improved somewhat after this, but a month later she suddenly became unconscious and died. At post mortem a huge chronic abscess was found in the temporal lobe which could have been drained with every prospect of success at the time of the mastoid operation.

This case also brings out forcibly the fact that an apparently normal and pulsating dura is not evidence against the existence of an abscess.

The Latent Stage.

The latent stage follows the stage of onset and may last for days or weeks. It is said commonly that there are no signs at this time, but this most emphatically is not correct. The signs are there, and the aim must be to appreciate them and make a diagnosis in this stage. The patient has passed through a sudden, short-lived illness—the stage of onset—from which he has to some extent recovered, but *not completely*, and he has a focus of infection in the skull, such as a running ear. The conjunction of these three events—a focus of infection, a short, acute illness, and an incomplete recovery—should raise strong suspicions of some intracranial extension from that focus. Once suspicion is aroused a search will be made for confirmatory signs, and the following are briefly what may be expected.

Mental changes are very constant, and perhaps the most important of all at this time. A child is apathetic and listless, will not play with his toys and does not resent their being taken away. An adult is drowsy, lacks concentration, and allows his attention to wander; his memory may be faulty and his cerebration slow, so that there is a distinct pause between question and answer, though the answer when it comes is intelligent and correct. A change of disposition is not unusual, the normally good-tempered individual becoming fretful and irritable.

The *general appearance* is often very characteristic. The patient has a greyish unhealthy complexion, looks seedy, the tongue is furred, and the appetite poor.

Headache is always present to some extent, but is not continuous. It is rarely severe, more a dull aching discomfort, and seldom a day passes without it. It is not commonly localised, and if it is the position of the pain bears no constant relation to the position of the abscess. Percussion over the site of the suspected abscess sometimes produces or increases the pain.

The *temperature* and the *pulse-rate* may be of great assistance, and these suspected patients should always be put on a four-hourly chart, or even better, a two-hourly. The temperature is not the accepted subnormal, but shows considerable irregularity about the normal level, as of a septic temperature low down the chart. It may be raised throughout. The pulse-

rate in general corresponds with the temperature and is seldom unduly slow, but in most cases it does fall once in a while and become definitely subnormal in relation to the temperature. This is only a transient drop, but is of the greatest significance, and it is to catch this drop that the two-hourly chart is so useful. In a recent case in which the temperature was persistently 99° to 100° or 101° F., and the pulse-rate 90 to 100, a drop on two occasions to between 60 and 70 was a very important factor in deciding to explore.

Lumbar puncture may be of assistance and should be done, as it is a safe procedure in the early days, and only a small quantity of fluid is required. Any increase in pressure or in cell count, with diminished percentage of chlorides, will be valuable confirmatory evidence. For a full account of the changes found in the cerebro-spinal fluid in abscess cases reference should be made to the recent book by Greenfield and Carmichael.[7]

The brief history of one case may help to point the moral of this tale. A boy of 6 was brought to the out-patient department with the story that for two years he had had a running ear, off and on, following scarlet fever. A fortnight before he had a "bilious attack," since when he had complained of headache, and for one day of pain in the ear, which had been discharging again. He had a large marginal perforation in his drum, the tympanum contained granulations, and there was slight tenderness over the mastoid antrum. He looked seedy, was rather sleepy, and took no interest in the proceedings at all. Temperature, 99·4° F.; pulse-rate, 96; resp., 24—nothing very remarkable. There were no signs in the central nervous system. He was admitted with a diagnosis of chronic suppurative otitis media with exacerbation, (?) some intracranial complication, because of his general appearance and the story. At operation, the tympanum and mastoid antrum contained cholesteatoma and offensive pus, and in one place the dura was found bared by erosion, but pulsating and covered with apparently healthy granulations. Nevertheless, it was decided to explore, and while enlarging the bony opening into the middle fossa, a small sequestrum was removed, followed by stinking pus oozing through a small opening in the dura. An abscess containing nearly half an ounce of pus was found and drained, with ultimate recovery of the boy.

Had full credit not been given to the history and mental condition of the child in this case it is improbable that the abscess would have been found at the first operation as there would have been no reason for a further exposure of the dura.

Localisation.—Having diagnosed, or suspected, an abscess in the early stages, it is of advantage to have some idea of its localisation. This is often not possible, and both cranial fossæ may have to be explored, or, at any rate, their dura exposed. But certain indications may put one on the right track. Thus with a focus in the ear a complaint of headache mainly frontal or occipital suggests a cerebellar lesion, as do also suboccipital tenderness or pain or a stiff neck. The association, with general signs of an abscess, of a dead labyrinth or of a thrombosed lateral sinus, would also point to a localisation in the posterior fossa. Per contra, the absence of any of these conditions would lead one to expect the abscess, if present, to be in the middle fossa, where, especially on the right side, abscesses are notoriously silent.

TREATMENT.

If, then, the position be accepted that an abscess must be suspected on much more slender evidence than has so far been considered adequate, the case for the need of earlier exploration of the brain is made. I am far from suggesting that every case of otitis media which has flared and has a headache should immediately have his brain explored; enthusiasm must be tempered with discretion. But I do suggest that it is far better and safer to explore half a dozen brains unnecessarily than to leave one abscess undiscovered for want of exploration. For the latter will die, whereas the other half dozen will come to no harm. Brain exploration with reasonable precautions is a safe and simple procedure, is painless, can be done in bed through an area of exposed dura without an anæsthetic, and is productive of no harmful after-effects. Yet even on the part of otologists, who realise these facts better perhaps than most people, there seems to be a great aversion from taking a chance. The dura is exposed time and again, but too often the evil hour of exploration is put off.

Indications for Exploration.

These are briefly three: (1) Where there are definite localising signs. Our ambition must be to catch cases earlier than this. (2) Where there are general signs of intracranial suppuration associated with a neighbouring focus of infection. The early appreciation of these general signs has formed the gist of the previous section of this paper. (3) Where intracranial symptoms have persisted or recurred after drainage of the primary focus. There are many patients with vague intracranial symptoms which clear up entirely after the focus of infection has been dealt with. In such indefinite cases the correct procedure without doubt is to operate on the mastoid and at the same time inspect the condition of the lateral sinus and the dura of the middle fossa, leaving a widish area of dura exposed and packing the wound open. If the suspicious symptoms do not subside, or if they become more marked, it is a simple matter then to explore the temporal lobe, this being the likely site of the abscess given an intact labyrinth and lateral sinus, and healthy bone between. In suspected cases a dura normal in appearance and pulsation should not be considered as a contra-indication to exploration.

Route of Approach.

Opinion is nowadays fairly unanimous that the best route by which to approach an abscess of the brain is via the originating focus, for which reason the treatment of the condition has passed largely out of the hands of the general surgeon into those of the otologist. There are many advantages in this method. It deals with the source of the infection; the track into the brain can be followed if found and drainage instituted through an area of subarachnoid space already shut off by adhesions; and any additional complication such as an extradural abscess or lateral sinus thrombosis will not be overlooked. The advantages claimed for exploration and drainage through a clean area seem to be theoretical rather than practical, and are not commensurate with the risk of leaving untouched the source of infection and any other possible complications. Therefore a frontal abscess will be approached via the frontal sinus, a temporal abscess via the mastoid with removal of the tegmen, a cerebellar abscess via the mastoid, and an abscess following a wound via the track of the wound. The only one of these which needs enlarging upon is the case of a cerebellar abscess.

Infection enters the anterior end of the cerebellum either by way of the sinus, the labyrinth, or the bone of Trautmann's triangle, and, following the principle of exploring along the path of infection, the abscess should be sought from this aspect. It is undoubtedly the surest way of finding a cerebellar abscess. But drainage presents difficulties on account of the limited space, especially in the event of a forward sinus. If the sinus is thrombosed the problem is simplified; as the sinus has to be obliterated, brain exploration will probably be undertaken through its inner wall, and the dural exposure can be increased to any desired extent by removal of bone on either side. But should the sinus be uninfected the problem of obtaining room becomes more difficult. It is generally recommended that the labyrinth should be opened by Neumann's method, in order to provide this space. This does not appeal as very sound surgery, unless the labyrinth is already dead, for it involves the destruction of a functioning special organ. Further, the extra space provided is not unlimited, and the presence of a drainage-tube in such close proximity to the sinus does not conduce to a feeling of security. I have seen secondary hæmorrhage and infection of the sinus occur from pressure of the tube. Counter-drainage behind the sinus enables a smaller tube to be used in front and a large one behind and is an effective measure for preventing the pooling of pus in

the posterior part of the abscess cavity, which becomes the most dependent part in the recumbent position. But the procedure which seems the most reasonable of any, and which has proved very satisfactory, is deliberate obliteration of the intact sinus. By this means destruction of a functioning labyrinth is avoided, the danger of tube in contact with sinus is overcome, the abscess cavity can be opened up in its entire length if necessary, the operation has no ill-effects upon the patient, and finally it takes much less time than opening up the labyrinth, especially if it is also necessary to do a radical mastoid and remove the promontory to provide drainage.

Some Points of Technique.

(1) *Dural Exposure.*—It is generally agreed that the ideal place through which to explore the brain is along the track of infection, and therefore a thorough exposure of the dura of both fossæ, if necessary, should be made to search for the point of entry. This is not always easy to find at operation, and too much time should not be spent in searching for it. But in the great majority of cases there is a macroscopical point of entry to be found, as is shown by an examination of post-mortem and museum specimens.

(2) *The Use of Antiseptics* should be limited to the dura, upon which they have no harmful effects. It can be sterilised with spirit before incision. The introduction of gauze soaked in iodine into the subdural space to encourage the formation of protective adhesions is unsound. The brain has little resistance to trauma, bacterial or chemical, and the application of antiseptics to it induces an encephalitis and defeats its own ends, a lesson which was learnt in dealing with war wounds of the brain.

(3) *Exploration.*—Having exposed and sterilised the dura and packed off the bone cavity, one is in a position to explore. In the absence of any sign of a track, blind exploration must be undertaken through an incision in the dura. It is better not to explore in more than one direction through the same incision. Three small openings should be made about a quarter of an inch apart with a tenotome, and exploration in different directions made through each incision, otherwise it is possible that pus passing along one exploration track might infect another track which had been unsuccessful in finding the abscess. Further, if several unsuccessful explorations have been made through one incision and later an abscess discharges down one of those tracks, it is impossible to tell which one leads to the abscess.

(4) *Exploring Instruments.*—In general cutting instruments such as tenotomes are to be avoided owing to the risk of dividing a large vessel in the brain substance. I have seen a patient die, and found his ventricles full of blood post mortem, as a result of the injudicious use of a tenotome, the brain, moreover, containing an undiscovered abscess. A cannula is unsatisfactory owing to its tendency to get blocked with thick pus. Some form of angled dilating instrument, such as aural or nasal dressing forceps or a laryngotomy dilator, is very satisfactory, and drainage-tubes can readily be passed along between the blades.

(5) *The Direction of Exploration* should be towards the ventricle in the cerebrum if working from the known point of entry, and backwards in the cerebellum. If working blindly the anterior end of the temporal lobe must be remembered, as abscesses situated here are very liable to be missed. My last case was such a one, only found at the third time of exploration three inches anterior to the roof of the antrum, and I have seen others. In the cerebellum the direction of blind exploration should be always backwards, and upwards or downwards, that is, either side of the great horizontal fissure, if working from the anterior aspect. The instrument should be advanced little by little and opened at each pause if the abscess is not to be missed.

Treatment of the Cavity.

When the abscess is located the exploring instrument is held in position while the original dural incision is enlarged in a crucial manner. The forceps are then opened and a long-bladed Thudicum's speculum is passed along as far as the cavity which can thus be inspected by means of a head-lamp. Finally, two rubber drainage-tubes, one of large bore and the other about half the size, are passed into the cavity between the blades of the speculum to reach just above the floor, and are firmly secured in this position by stitching to one edge of the skin incision. The bone cavity is packed with bipped gauze and the wound left wide open. I believe that nothing more than the insertion of a drainage-tube is advisable as far as concerns the immediate treatment of the cavity. Some authorities, however, advocate a much more complicated toilet. Neumann recommends exploration of the cavity with the finger to feel for small pockets. Whiting has devised an encephaloscope wherewith to inspect the cavity, while others advocate careful mopping out of the whole cavity with pledgets of wool. I am convinced that these procedures are wrong, for the brain is a delicate tissue, easily damaged, much less easily repaired. Moreover the walls of an abscess in the brain are in the majority of cases tenuous and soft, and even gentle palpation could scarcely avoid damaging them, far more so the introduction of an encephaloscope. Insertion of a speculum is, I think, justifiable in order to ensure that the drainage-tube is placed in the cavity and not short of it, or along side it.

With regard to the method of drainage, the two-tube method is very satisfactory. The tubes are of different bores, the smaller one to run fluid through during after-treatment, and the larger to allow it to flow away rapidly and so avoid any pressure in the abscess cavity. Innumerable other methods have been suggested, many no doubt equally satisfactory. The only one in particular that I would protest against is the insertion of any form of gauze, particularly of gauze impregnated with an antiseptic, for it acts not only as an irritant increasing the encephalitis, but rapidly becomes soaked with pus, and serves then as a plug rather than a drain.

After-treatment.

This should be carried out once daily by the same person, if possible by the surgeon in charge of the case, or a trained assistant, for much damage may be done by an inexperienced person. The patient sits up in such a position that the tubes are dependent, and it is often surprising how much pus drains away simply by this alteration of position. The cavity is very gently washed out with saline or Ringer's solution through the small tube until the washings come away clear. This is a purely mechanical process, and the introduction of any antiseptic whatever is to be condemned. The cavity is carefully emptied by posture and the dressings are replaced. If the discharge is very copious the outer dressing may be changed as often as necessary, but the abscess itself should be left alone. The two tubes are best left undisturbed for about a week until a track has formed, and when ultimately they are removed for cleaning they should be taken out one at a time, replacing one before removing the other, and making quite certain that the tube is actually in the abscess cavity. If only one tube is used, or if both are removed at the same time, it is very easy in replacing the tube to make a fresh track and place it alongside, and not into the abscess. Drainage should be maintained until the abscess cavity is completely obliterated.

If these various points are carried out with meticulous attention to detail complications such as pocketing, second abscess formation, and hernia, which are due in the main to defective drainage, will be little likely to occur.

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OBSERVATIONS ON THE MECHANISM AND ELEMENTS OF PLEURAL PAIN.

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It is generally accepted that the pain associated with inflammation of the costal pleural membrane is sharp and lancinating, that it is more intense on coughing and at the end of a deep inspiration, and that it abates on expiration; that it is experienced in the lower part of the chest, usually in the region of the anterior axillary line; and that pleurisy towards the apex of the lung causes a dull ache and not a sharp inspiratory pain. Further, it is accepted that the visceral pleura is insensitive, that the costal parietal pleura is richly supplied with sensory nerves (from the intercostals), and that certain types of irritation or stimulus to the membrane are experienced by the patient as definitely localised pain. Considerable differences of opinion exist, however, on the mechanism of production of pleural pain. The most generally accepted view is that it is produced by the inflamed pleural membranes rubbing and pressing against one another. This may be termed the *friction theory*. Mackenzie [1] was the first to question the friction theory, and he advanced the *muscular theory*, namely, that the pain is due to hyperalgesia of the intercostal muscles. He based this theory mainly on the assumption that the parietal pleura, like the visceral, is insensitive. Recently Bray [2] has enunciated what he calls the *tension theory* of pleural pain,—viz., that the pain is caused mainly by tension or stretching of an inflamed parietal pleura.

The following cases are interesting as examples of varying types of pleurisy studied with the object of determining the mechanism and elements of pleural pain; in the main they tend to support Bray's tension theory. For the purposes of this paper cases of diaphragmatic pleurisy have been excluded, as the mechanism of the primary and referred pains in this condition differs from that of costal pleurisy. The sensory nerve-supply of the diaphragmatic pleura is also more complex (see Capps [3]).

Acute Pleurisy Supervening during Artificial Pneumothorax.

I have observed in many instances that when pleurisy comes on during the course of an artificial pneumothorax, the pain is similar in all respects to that of acute pleurisy when the lung is not collapsed—i.e., it is more severe during inspiration and diminishes during expiration, and is felt almost invariably towards the base of the chest. In addition, during the acute stage, an area of hyperalgesia of the skin is constantly present. The following case is a typical example.

A girl, aged 19 years, had pulmonary tuberculosis involving the left lung. Artificial pneumothorax was induced on Nov. 20th, 1926, and complete collapse was obtained about five weeks later. On May 13th, 1927, three days after a refill had been given, she complained of severe pain in the lower part of the left side of the chest. She described the pain as "like a knife going through the chest from front to back." On further questioning she said that the pain was worse on coughing and during inspiration. She also complained that the skin over the region of the pain was tender to the touch.

On examination the signs of complete pneumothorax were found. A succussion splash was not heard. As would be expected, no friction rub could be detected. An area of hyperalgesia of the skin was found over the lower part of the front of the chest and axilla, about 8 in. in diameter, involving the areas of skin supplied by the sixth to the ninth intercostal nerves. The distribution of the hyperalgesia was not segmental. An X ray examination of the chest showed that the left lung was completely collapsed. The hyperalgesia persisted for 12 days, and a succussion splash was heard on the fourth day after the onset of the pain, showing that a small pleural effusion had formed. The characteristic pleural pain lasted for about eight days. On one occasion during the period of acute pain, an attempt was made to determine the intrapleural pressure, and it was found, on introducing the needle of a hypodermic syringe into the parietal pleura, that the membrane was exquisitely tender, and that novocaine failed to produce local anæsthesia.

This was a case of acute pleurisy coming on while the lung was collapsed. The pain was characteristic of pleural pain—i.e., it was worse on coughing and at the end of inspiration, and abated during expiration. The lung was definitely collapsed, and there was no possibility that the pain was caused by friction between the two layers of the pleura. An additional element was the broad area of hyperalgesia, which persisted for twelve days. The parietal pleura was extremely sensitive, and the patient was able to localise accurately the pain caused by the introduction of a needle into the pneumothorax cavity.

Pneumonia Complicating Pulmonary Tuberculosis.

A man, aged 49, admitted on Feb. 18th, 1927, under Dr. G. T. Hebert, who kindly allowed me to study and report the case. He had suffered from chronic bronchitis for 26 years, and was subject to attacks of asthma. For several months his general health had been failing, and tubercle bacilli had been found in his sputum. For ten days after admission his temperature chart showed a typical evening rise to 99° F., but on March 1st he developed a sharp pain in the lower part of the right chest; the temperature rose to 101° F., and the respiration-rate to 40 per minute. He described the pain as "a knife going through the chest," and as more intense on inspiration. The cough was suppressed, as it caused great pain, and he complained that the pressure of the bed-clothes hurt his side. There was an area of cutaneous hyperalgesia 4½ in. in diameter on the postero-lateral aspect of the right side of the chest, extending from the eighth to the twelfth rib (not segmental in distribution). On auscultation, a loud friction rub was heard exactly over the area of hyperalgesia. The inspiratory pain was experienced by the patient in the same place. Elsewhere over the right lower lobe the breath sounds were distant, and medium crepitations were heard. The acute fever and rapid respirations persisted for ten days, after which the case resumed its usual character. The hyperalgesia persisted for four days, the inspiratory pain for six days, but the friction rub could be heard as late as the tenth day.

The important points were: (1) that the friction rub could be heard even after the pain had ceased, showing clearly that friction per se is not the cause of pleural pain; (2) that the friction rub and the area of hyperalgesia were exactly superimposed; and (3) that the hyperalgesia was a single broad area of non-segmental distribution.

Acute Pleurisy Associated with Fibrosis of the Lung and with Pleural Adhesions.

A woman, aged 46, whose illness started in 1911 with hæmoptysis. For three years she was quite well, until in March, 1914, she developed a pleurisy with effusion on the right side. From then until the present time she has been under regular supervision. She has had frequent attacks of pain, pleural in type, on the right side, with dyspnœa and occasional hæmoptysis. In May, 1926, she was found to have definite fibrosis of the right lung. X ray examination showed that the heart was displaced about two inches towards the right side, and calcified opacities were seen in the right lung. It seems reasonable to assume that dense pleural adhesions were present at the right base. On Dec. 4th, 1926, she had an attack of pain in the right side, associated with a slight hæmoptysis. She described the pain as "going through the chest like a knife," and as worse on coughing and on "breathing in." She also complained that the skin was tender. On examination it was found (1) that the heart was displaced to the right; (2) that an area of cutaneous hyperalgesia about five inches in diameter was present on the lateral wall of the chest, extending above to the fourth rib, in the mid-clavicular line; (3) that the breath sounds were distant over the right lower lobe, but that crepitations, superficial in character, could be heard over the base of the chest, especially over the site of the pain.

The side was strapped and the patient sent home to bed. When she was seen after a week, the pain and hyperalgesia had disappeared.

The essential points in this case appear to be: (1) The pain was of a typical pleural character, and was due probably to tension or stretching of the inflamed parietal pleura. (2) Owing to the dense pleural adhesions preventing friction between the pleural membranes, superficial crepitations and not a friction sound were heard. (3) The cutaneous hyperalgesia

was, as in Case 2, situated over the apparent area of pleural inflammation. It seems to be a reasonable deduction that, as the skin of the chest wall and the costal parietal pleura are supplied by the intercostal nerves, the areas of skin and pleura supplied by the same nerves are more or less superimposed.

Acute and Chronic Pleurisy in Unresolved Pneumonia.

Cases of mild, ambulant, unresolved pneumonia are comparatively common. The following case is a typical example and presents several instructive features concerning the nature of the pleural pain.

A woman, aged 32, attended the out-patient department on May 10th, 1927, and gave a history of having had cough and sputum, sweating, dyspnœa, and pains in the chest for 14 days. She had not stayed in bed because her husband had not allowed her to. She described the pain as being like a knife going through the left side of the chest, and as being worse on coughing and breathing. The temperature was 100·4° F., and the respiration-rate 28. Her skin was slightly cyanosed, the percussion note was impaired at the left base, the breath sounds were distant, and a few faint crepitations were heard over the same area. No friction rub, hyperalgesia of the skin, or deep tenderness was present. The heart was not displaced. Tubercle bacilli were not found in the sputum. The X ray report was "opacity at the left base; suggests resolving pneumonia."

She was kept under observation at intervals until August 30th, 1927, during which time the pains in the left side persisted, but gradually became less severe. It was noticed that she developed a slight tenderness on deep pressure over the skin of the lower part of the left side of the chest. Further X ray examination showed that the opacity at the left base had cleared considerably, but that some shadowing was still present. In December, 1927, it was noticed that the heart was displaced a little to the left. She still complained of pains in the left side, but they were more dragging in nature.

It appears that this is a case of very early fibrosis of the lung following an unresolved pneumonia, the pains being due to adhesions dragging on the parietal pleura. In this instance the usual initial hyperalgesia of the skin was not observed, as she was not seen until 14 days after the onset of the illness.

Discussion.

The four cases briefly described illustrate several factors in the production of pleural pain. In the first case the friction theory does not explain the pain, because the pleural surfaces could not possibly rub against each other; in the second, the existence of a friction rub without pain suggests that friction is not the primary factor; in the third, the characteristic pleural pain was present, although friction was prevented by pleural adhesions. In all three cases the additional factor of cutaneous hyperalgesia was present. The fourth case shows, in the first place, the presence of pleural pain without a friction rub, and, secondly, the dragging pain and deep tenderness associated with comparatively recent pleural adhesions.

I have not attempted to state all the points for and against the three theories of pleural pain, as too much space would be required. Bray gives a very good discussion in his original paper,[2] supporting the tension theory. If the friction theory is correct, the pain of pleurisy should be felt equally throughout inspiration and expiration, and not only at the end of inspiration. Strapping the chest with adhesive plaster gives almost complete relief from the sharp lancinating pain, not because friction is diminished or abolished by immobilising the ribs, but because stretching of the costal parietal pleura (which is attached to the inner surfaces of the ribs) is prevented. Mackenzie's muscular theory is based on the erroneous idea that the parietal pleura is insensitive. Again, it is not made quite clear whether the muscular hyperalgesia affects either or both the internal or external intercostal muscles. If both are involved pleural pain would be experienced equally on inspiration and expiration. It seems quite possible that hyperalgesia of the intercostal muscles or of the deep fascia exists as a secondary element of the pain of the acute stage of pleural inflammation, but, if so, it is masked by the cutaneous hyperalgesia. The observation that the pain of acute pleurisy subsides when a pleural effusion forms is frequently cited in support of the friction theory, because friction between the two layers of the pleura is thus prevented. At least two alternative explanations can be given: (1) That the pain is present during the acute congestive stage of inflammation of the pleura, and dimin shes during the stage of œdema or effusion owing to the fact that, by the exudation of the fluid, the end organs of the sensory nerves in the pleura are released from considerable pressure. (2) That the effusion causes collapse of the lung and diminishes the amount of movement of the affected side of the chest, and also the amount of inspiratory stretching of the parietal pleura.

The following provisional conclusions may be stated as a working hypothesis on which to base further investigation into the nature of pleural pain.

1. The ma n element of pleural pain—i.e., the sharp lancinating pain worse on deep inspiration—is due to tension or stretching of the inflamed parietal pleural membrane.

2. The tension may act in the plane of the membrane, as in the stretching on deep inspiration in acute pleurisy; or it may act tangentially, as in the dragging pains experienced when pleural adhesions are present.

3. The subsidiary elements of pleural pain are: (1) in acute pleurisy, hyperalgesia of the skin and possibly of the intercostal muscles or deep fascia overlying the inflamed parietal pleura; (2) in chronic pleurisy, slight tenderness of the deeper structures (also overlying the affected pleura), either of the intercostal muscles or the deep fascia. In an acute exacerbation of chronic pleurisy cutaneous hyperalgesia is frequently found.

4. The hyperalgesia of the skin situated over an inflamed parietal pleura is a phenomenon which lasts usually for five or six days and sometimes longer. In the majority of cases it may be taken as an indication of an acute inflammatory process of the parietal pleura. Further, in association with costal pleurisy the hyperalgesia is invariably local or direct and not segmentally referred (cf. Head [4]).

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CHRONIC OSTEOMYELITIS IN LONG BONES.

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Chronic bone disease, if syphilis, tubercle, new growth, and mycetoma be excluded, commonly presents itself to surgeons in India in one of two forms.

1. Massive necrosis of the whole or part of the original shaft, which is enveloped in new bone, with suppuration and sinus formation. This form is due to an attack of acute osteomyelitis, of which it is the sequel; it may cause intense suffering and discomfort to the patient and is liable to end in death from amyloid disease and exhaustion.

2. A chronic overgrowth and sclerosis of the shaft of the bone with or without the formation of sinuses. In this form there may be no outward sign of the sepsis which is lying in the heart of the bone, no sinuses, and none of the recurring abscesses which are so common in the first form. Sequestra may be formed and vary in size from tiny spicules to considerable fragments.

The outstanding clinical feature of both these varieties is chronicity; they may persist for years, from early childhood to adolescence, and from adolescence far into adult life, until an unusually severe exacerbation of sepsis or the onset of amyloid disease ends the patient's troubles. From the actuarial

point of view these cases are "bad lives." The history is a depressing one, and usually a record of continuous or intermittent suppuration from a persistent sinus or sinuses, alternating with recurrent acute trouble, followed by operation and inevitable disappointment. After these interludes of pain, insomnia, and fever the flow of pus resumes.

The surgical problem is the obliteration of a septic cavity with rigid walls. Some have adopted the methods of a dentist when dealing with a carious tooth, by filling the cavity with an amalgam of metals, or by the use of decalcified sponge. Others have poured hot antiseptic pastes into the cavity; these set solid on cooling. Others, again, endeavour to effect the obliteration of the cavity by means of pedunculated grafts of muscle; this procedure is obviously doomed to failure if there is any residual sepsis in the cavity.

The success attending these methods has been, on the whole, mediocre, but they have all one aim in common—viz., the obliteration of the bony cavity. The method to be described has the same object, but attains it, not by the introduction of a foreign body into a cavity, but by converting the cylinder of bone into a lath, nothing but the posterior thickness of the shaft being left. The free removal of all overhanging fragments permits the periosteal sleeve to collapse upon the residual strut of bone. New bone is rapidly laid down from the contiguous surfaces of bone and periosteum.

Technique.

The conservation of the periosteum is essential in this operation. The incision is made down to the bone on the surgical aspect through the periosteum, for the whole length of the diseased area. The periosteum is then carefully separated from the bone with a rougine, which should have a chisel edge of razor-like sharpness, so that an abundant supply of bone-cells from the cambium layer is elevated with the periosteum. The subsequent rate of repair will be directly proportional to the care with which this operation is carried out. The periosteum is separated up to the limits of the bone which it is decided to retain; it is essential to continue the removal of bone until nothing is left but the two plane surfaces of the posterior aspect of the shaft. With ordinary care, working within the periosteal sleeve, the danger of damage to soft parts is negligible. With an adequate incision an ample exposure is secured and nothing need be done in the dark. Free exposure and a good light are indispensable, for if a focus of sepsis is overlooked the success of the operation may be jeopardised.

As soon as sufficient bone has been stripped of its periosteum the cavity of the shaft is opened by suitably planned cuts into the bone. This may be done by an Albee's saw or with chisel and mallet. The electrically-driven saw saves much time and labour, but the necessary trimming of the shaft may be effected with chisel and gouge. The surface of bone which remains is carefully scrutinised for areas of necrosis, sinuses, or actual perforations, and all diseased tissue is energetically removed.

The surgeon then ascertains how far the periosteum and attached soft parts will glide in over the remains of the shaft and removes any projections interfering with this, as it is important to reduce the number of dead spaces to a minimum.

When the operative area is near a joint great care must be exercised to avoid damage to the articular cartilage, and the removal of bone should be so planned as to avoid too steep a descent. This is particularly necessary when dealing with the tibia, as too steep a gradient renders it difficult to get the raw surface of the bone covered by the flaps of soft tissues and periosteum.

When all the diseased tissue has been removed there remains a keel of bone to which is hinged on each side a flap of periosteum which originally covered half the expanded shaft and which still preserves its original connexions with the soft parts and therefore its blood-supply. These flaps are united in the line of the original incision by interrupted silkworm-gut sutures. This abolishes nearly all the dead space, any gap at the upper extremity of the incision being plugged with gauze and allowed to fill up from the bottom. If all the diseased tissue has been removed cavities will become obliterated by a vigorous growth of close healthy granulations, and there will be no more discharge than is usual with any granulating surface. Increase of or persistence of discharge means some undetected focus of caries, or recrudescence of caries in some part of the bone, and demands a further minor operation.

Illustrative Cases.

CASE 1.—Aged 28; duration of disease, one year. Admitted May 2nd, 1923. History of much pain and disability in the leg.

Operation (June 10th, 1923).—Great thickening and sclerosis of bone, and caries in medullary canal extending nearly half the length of the shaft. Complete operation, removal of all but a lath of bone so as to leave no overhanging edges. The separated leaves of periosteum came into good contact with the denuded bone. Convalescence was uneventful, and there was abundant formation of new bone. The wound healed by first intention. Discharged July 28th, 1923. Days in hospital after operation, 49 (seven weeks).

CASE 2.—Aged 22. Necrosis. Chronic osteomyelitis of the right tibia. Leg riddled with sinuses. Duration, ten years. Admission, July 3rd, 1923.

Operation (July 9th, 1923).—Complete operation. Bone greatly sclerosed and thickened. Rarefying osteitis, pus, no massive necrosis, no involucrum. All bone removed in anterior and lateral aspects, only a lath of bone left. The periosteum was carefully conserved. One small secondary operation was found to be necessary. The lower half of the wound healed by first intention, but there was a small cavity left at the upper end which was not quite healed when the patient left the hospital in October. Stay in hospital after operation, 86 days.

CASE 3.—Aged 12. Much discharge, massive necrosis and involucrum. Admitted July 30th, 1923.

Operation (July 31st, 1923).—Complete removal of all but posterior layer of involucrum, cylinder of necrosed shaft removed, as it was lying free in the cavity of the involucrum. Periosteum came into good contact with the denuded area. The lower half of the wound healed by first intention, but a cavity was left in the upper half, which was plugged daily with plain gauze and granulated up. Discharged Sept. 24th, 1923. Stay in hospital, 56 days.

CASE 4.—Aged 12. Chronic osteomyelitis of left tibia. Duration, six months. Admission, June 4th, 1923. Foul and copious discharge. General health very poor.

Operation (June 12th, 1923).—Removal of sequestra and of all but posterior part of the bone. Periosteum in good contact with denuded area in lower two-thirds of the wound. Cavity left in upper third, which was plugged. Discharge persisted, so wound was explored August 21st, 1923, and a large piece of old necrotic bone found under an overhanging ledge. This was chiselled away, and the piece and all granulations removed. Gauze packing, wound securely healed in its entire extent by Nov. 10th, 1923. General condition much improved. Stay in hospital, 152 days.

CASE 5.—Aged 15. Chronic osteomyelitis of the left ulna. Duration, one year. Ulnar border of the arm was riddled with sinuses.

Operation (July 10th, 1923).—Large sequestrum round rather patchy involucrum, many sinuses, periosteum came into good contact with the denuded surface of the bone. Discharged August 29th, 1923. Good formation of bone and wound solidly healed. Stay in hospital, 50 days.

If the solidity of the residual shaft of bone permits the patient should be allowed upon his feet as soon as the wound is soundly healed, or earlier if there is any delay in healing. Use is the best stimulus to bone growth. To secure rapid healing and the best results the surgery must be very bold and radical; half-hearted operations are better left undone.

ROYAL MEDICAL BENEVOLENT FUND.—The following are some additional cases relieved at the last meeting:—

M.B. Edin., aged 40, married, three children, two daughters aged 17 and 4, and son, aged 12. Applicant's appointment abroad ceased in September, 1927, and he and his family arrived in this country in November, and have since been living on what small resources they had which have now come to an end. Has been unable to secure any appointment. £7 16s. was given them by the Social Service and the Church, £6 by the Guild and the Fund voted £10 for immediate necessities.

Daughter, aged 45, of L.R.C.P. who died in 1886. Both she and her sister have supported themselves by teaching in schools, and the applicant is now bedridden from rheumatoid arthritis and is entirely dependent on her sister. Friends have done their best to help with expenses for special treatment, but this has been of no avail. Asked Fund for grant to enable applicant not to be an entire burden upon her sister. Voted £26.

Subscriptions may be sent to the hon. treasurer, Sir Charters Symonds, at 11, Chandos-street, Cavendish-square, London, W. 1.

FRACTIONAL TEST-MEAL ANALYSIS.

A SIMPLIFIED TECHNIQUE, WITH SPECIAL REFERENCE TO CHLORIDE ESTIMATIONS.

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In theory the study of gastric function by the fractional test-meal method involves the quantitative chemical examination of the variations of both acidity and chlorides. In routine practice, however, full investigation is made of the acidity, but scant attention is usually paid to chlorides, though their importance is obvious. The two factors really go hand-in-hand, for many of the acidity curves can have but very little meaning in the absence of chloride determinations. For instance, the absence of free hydrochloric acid cannot by itself distinguish between an achylia and an achlorhydria due to complete neutralisation, nor, at the other extreme, can mere evidence of a hyperchlorhydria differentiate between hypersecretion and defective neutralisation. Such considerations have been frequently emphasised, notably by Bolton and Goodhart[1] and Baird, Campbell, and Hern,[2] and need not be elaborated here. It must be assumed, therefore, that the determination of chlorides is omitted on account of the analytical difficulties explained below. Indeed, analysis greatly needs simplification, and this paper presents a method which avoids long and difficult technique.

Estimation of Chlorides.

(1) *Total Chlorides.*—The standard method of estimation is to render the sample alkaline, evaporate to dryness, incinerate, and finally determine the chlorides by Volhard's method. The preliminary process takes time and the incineration requires cautious manipulation, patience, and skill. A Volhard titration on the original fluid is vitiated by the presence of protein, but this can be eliminated by the simple expedient of enormously increasing the proportion of nitric acid to test-meal sample in the mixture to be titrated. The whole determination is carried out in one operation, requiring no more than a simple titration of the Volhard type, and in less than one-tenth of the time formerly occupied.

Method.

Take up 0·2 c.cm. of filtered fluid in a blood pipette, carefully discharge this amount into 3 c.cm. of pure nitric acid contained in a wide test-tube, sucking up the acid two or three times to wash out the pipette. Add 1 c.cm. of N/30 silver nitrate solution, and then 4 c.cm. of pure acetone; the latter gives a sharp end-point. Mix, and after adding three drops of a saturated solution of iron alum as indicator, titrate finally from a 5 c.cm. microburette with alcoholic ammonium thiocyanate, previously standardised against the silver nitrate. (Ordinary aqueous thiocyanate of N/10 strength diluted with two volumes of alcohol is a suitable solution.)

Calculation.—Using solutions of exactly N/30 strength, if x be the number of c.cm. required in the titration, then $(1-x)\times\frac{100}{0{\cdot}2}\times\frac{1}{3}$ gives the degrees of total chloride (i.e., the number of c.cm. of N/10 chloride in 100 c.cm. of fluid). To convert this into percentage HCl multiply by 0·00365.

A series of comparative results, using the incineration method and the present one on samples taken at random from different test-meals, in each case performing the analysis on 0·2 c.cm. of fluid, is compiled in the table below. The figures represent degrees of total chloride.

Sample.	Incineration method.	Present method.
1	133·3	136·6
2	46·6	46·6
3	115·0	115·0
4	80·0	81·6
5	27·6	27·6

The methods agree within the limits of experimental error.

(2) *Mineral Chlorides.*—In the presence of an appreciable amount of free hydrochloric acid it will usually be sufficient to calculate the value of the mineral chlorides as the difference between the total chlorides and the total acidity, for in such cases the free acid acts as a check to fermentation and the amount of organic acid is negligible. In other cases it may be necessary to analyse for mineral chlorides. For this purpose no departure can be made from the principle of the generally accepted method. Incineration—without previous neutralisation—is the essential feature, but the method as given in the text-books is unnecessarily long, because too much material is evaporated to dryness and then incinerated. Time can be saved without loss of accuracy by taking one-tenth of the usual amount of fluid. Moreover, directions are not, as a rule, precise enough as to the conditions under which the combustion should be performed. A Bunsen burner playing directly upon the ignition crucible to give a dull red heat is commonly recommended, but when no more than a "dull red heat" is employed an appreciable amount of chloride is lost by volatilisation. This error does not arise if a fine iron gauze is interposed between the crucible (which should be thin-walled) and the flame, and the ignition is expedited if a Meker burner is substituted for the ordinary type of Bunsen. The entire organic matter in 0·2 c.cm. can by this means be safely incinerated within five minutes.

Method.

Take 0·2 c.cm. of fluid and discharge it into a porcelain crucible, washing out the pipette with three or four drops of distilled water introduced from a second pipette. Evaporate to dryness on a water-bath, and incinerate as described, placing the cover over the crucible for the initial stage. The process is complete as soon as the whole of the black carbonaceous material is destroyed, leaving a grey ash. Allow to cool, then take up the residue in 2 to 3 c.cm. of distilled water, and add an equal volume of nitric acid, followed by 1 c.cm. of N/30 silver nitrate. Finally add acetone and iron alum as in the previous method, and complete the titration in the usual manner.

Estimation of Free and Total Acidity.

There is little scope here for simplification, as the method usually adopted (Töpfer's) is one of the simplest of all chemical procedures. The alternative put forward involves only a minor alteration of technique, but most of those to whom the author has privately communicated it have preferred it to Töpfer's. It replaces Töpfer's two indicators by thymol-blue (thymol-sulphone-phthalein). A few years ago Cole and Adie[3] elaborated a method of using this indicator, but their contentions were subjected to well-founded criticism by Ryle,[4] whose essential point is, in effect, that the refinements of their method accomplish nothing clinically which cannot equally well be achieved by simpler means. But, stripped of these refinements, it provides the basis of a method which is extremely simple—viz., when the titration of the free HCl is carried to the point where the red tint, given by the indicator in the presence of mineral acid, just disappears. The assumption, accurate enough for all practical purposes, is that only the free acid reacts with the alkali up to this point. Continuation of the titration to the point of first appearance of the blue colour gives the measurement of the total acidity. (The significance of these colour changes will be made clearer by reference to the paper of Cole and Adie.)

Method.

Pipette 2 c.cm. of filtrate into a test-tube and add three drops of a 0·1 per cent. solution of thymol-blue. In the presence of free HCl the mixture will appear red. In this case titrate with N/10 sodium hydroxide from a 5 c.cm. microburette to the point where the red tint is no longer perceptible, noting the amount of alkali added (x c.cm.). Continue the titration through the range in which the mixture is yellow, until the point where it turns sharply blue, now noting the whole of the amount of alkali added from the beginning (y c.cm.). Then $50x$ gives the degrees of free acid and $50y$ the total acidity. If on first adding the indicator the fluid appears yellow, no free HCl is present, and the titration is simply performed for total acidity.

No comparative figures need be cited. For obvious reasons the three methods discussed give practically

identical results where the amount of protein in solution is very low, a condition which obtains in nearly all fractional test-meal samples. However, as Cole recently pointed out,[5] in the resting fluid, where the protein tends in some cases to be relatively high, a discrepancy would arise under such circumstances between the results obtained by the methods of Cole and Adie, and Töpfer, the inaccuracy—the more appreciable the greater the protein content—being on the side of the Töpfer method. Here closer agreement with the exact values would be attained by using the present technique instead of Töpfer's, for, on the basis of principles enunciated in the paper of Cole and Adie, this would follow from the fact that the end-point of the initial titration (pH 2·8 approx.) is intermediate between that of Cole and Adie (pH 2·0), and that of Töpfer (pH 4 approx.).

On this score, therefore, as well as on account of its simplicity, the thymol-blue method would seem justified.

Summary.

(1) An easy and rapid method is described for the estimation of total chlorides.

(2) Considerable saving of time and labour results when the estimation of mineral chlorides is conducted on a micro-scale under the conditions stated.

(3) A method devised to take advantage, in the readiest manner, of the colour changes of thymol-blue, is preferred to Töpfer's method of estimating free hydrochloric acid and total acidity.

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THE MEINICKE MICRO-REACTION.

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THE diagnosis of syphilis in patients admitted to a mental hospital is a matter of some importance in view of its possible ætiological influence on their psychosis. Ordinary clinical examination is fairly effective in discovering general paresis and cerebro-spinal syphilis, but practically all the cases of latent syphilis go undiscovered unless a Wassermann or other serum examination is performed. It is laborious, and sometimes very difficult, to withdraw enough serum for a Wassermann in resistive or troublesome cases, children, and those whose veins are poorly developed, and the need for a test that would obviate these difficulties has been felt for some time. The Health Committee of the League of Nations, in its report on the sero-diagnosis of syphilis (Copenhagen, 1923), stated that "the flocculation tests cannot at present replace the Bordet-Wassermann test," but reported favourably on their reliability, and mentioned the simplicity of the Meinicke turbidity reaction. Unfortunately, all these tests require a considerable amount of serum. Micro-methods for the Sachs-Georgi test were devised by Scheer and A. H. Priestley,[1] and for the Kahn reaction by B. S. Kline and A. M. Young,[2] and by R. L. Kahn himself. Weidainz reported a micro-method for the Wassermann reaction. In most of these, however, there arose the problem of inactivating a small quantity of serum, and the Kahn micro-method involves the difficulty of measuring small quantities of serum by means of capillary pipettes.

In 1923 the late Paul Dohnal[3] discovered a micro-method for the Meinicke turbidity reaction. This was simplified and improved by Meinicke[4] in 1925. The practical value of the test has been amply proved by the investigations of Dohnal, Untersteiner, Rietschel, Meinicke, and others. So far there has been very little work done on it in this country or in America, though it is extensively used on the continent. The Meinicke micro-serum reaction was first tried at this hospital over a year ago, and we are now in a position to give an opinion on its reliability and utility.

Technique.

1. *Serum.*—This is collected from a finger-prick and the blood run along a capillary tube 10 c.cm. long by 1 mm. inside diameter. Two-thirds of the tube are filled and the empty end sealed by a flame, taking care that the blood is not heated. Only if the capillary is to be sent away does the other end require sealing with wax. The tube is now left for a few hours in a cool place in a horizontal position and then centrifugalised towards the sealed end. The clear serum collects in the centre and is ready for use when the tube has been filed and broken and the contents tapped or blown on to a clean numbered slide.

2. *Antigen.*—Meinicke uses a cholesterin-free extract of horse heart muscle with the addition of balsam of tolu. One c.cm. of this is placed in one test-tube, and in another is placed 10 c.cm. of a 3 per cent. saline solution, to which pure sodium carbonate in the proportion of 1 to 8000 has been added. The two are placed in a water bath at 40° to 45° C. for ten minutes and then mixed by pouring rapidly three times from one to the other. The diluted extract is poured into a warmed porcelain crucible and covered with a watch glass. It has a yellowish tinge and is somewhat opalescent. As it rapidiy becomes more opaque it should not be kept longer than ten minutes, in which time from 10 to 15 sera can be mixed with it.

3. *Mixing.*—Two platinum eyelets are used for this mixture. They are measured so that one loopful of the larger contains exactly five times as much as the smaller. The larger, about 5 mm. in diameter, is attached horizontally to a small porcelain stand, and a loopful of the diluted extract is taken on it. On the smaller, which is about 2 mm. in diameter, serum is taken. By passing this one through the lumen of the larger a 1 in 6 dilution of serum with diluted extract is accurately and easily made. The extract and platinum eyelets may be obtained from Dr. Meinicke's laboratory, Elberfelder Str. 74, Hagen, Westphalen, Germany.

4. *Examination.*—Both dark-ground and hanging-drop preparations of the mixture are made and examined within two hours. As several specimens are examined at once no other controls are needed. With the dark-ground illumination, using weak ocular and strong dry objective, a negative reaction shows an even greyish field, full of tiny gaily dancing dotlets. In a positive reaction the field is black, empty, and quiet, and very few dotlets are seen. The hanging-drop preparation is made in the usual way on a hollow slide, using a small loopfulof the mixture. The edge of the cover-slip should be vaselined to prevent evaporation. Here all the planes are optically empty in a negative reaction, save for the almost infinitesimal dancing particles, which are practically invisible. In a positive reaction agglutination occurs, and the clumps, which are at first evenly distributed, gradually sediment towards the lower pole. Blood corpuscles, fragments of dust and bacteria, if present, can be distinguished from true agglutinations by their shape and colour.

For some time now we have dispensed almost entirely with the dark-ground illumination, finding, as Meinicke himself does, that sufficient information can be gathered from the hanging-drop preparation. Our only fresh observation is that a delayed positive reaction has been noted on two occasions, so that it is advisable to re-examine the slides eight or nine hours after the test has been completed. The blood is collected by a trained nurse. Eight or ten of the capillary tubes are sent over to the laboratory at a time, and within a few hours the results of the examination can be sent to the medical officer concerned. Where a positive reading is found, a confirmatory Wassermann test is always performed. All glassware should be absolutely clean and free from grease, and the room temperature for the test should be about 20° C. The atmosphere should be humid.

Experimental Results in a Mental Hospital.

The sera of over a thousand patients have been tested. In 429 of these the Wassermann has been done as a control, and there is an agreement between the

results of the two tests in 93·3 per cent. of the cases. The main source of disagreement between the readings was in those general paralytics whose serological findings had undergone modification after a course of treatment by malarial inoculation and tryparsamide. The test has been performed on all new admissions since June 1st, 1926, and the numbers diagnosed as syphilitic between then and May 31st, 1927, make a most interesting comparison with the corresponding numbers for a year prior to the institution of a routine serum examination.

1925.			*1926–27.*		
Admissions.		Syphilitic.	Admissions.		Syphilitic.
Male .. 260	..	32 (12·3%)	Male .. 264	..	58 (21·9%)
Female .. 209	..	9 (4·3%)	Female .. 190	..	17 (8·9%)

Of the male admissions in 1925, 30, or 11·5 per cent., were general paralytics. The remaining two cases were of cerebro-spinal and meningo-vascular syphilis. On the female side seven of the nine, or 3·3 per cent., were general paralytics, and of the remaining two cases one was of cerebro-spinal and the other of meningo-vascular syphilis.

In the 1926–27 period the diagnosis of the 58 men and of the 17 females, according to their mental state, was as follows :—

MEN.		WOMEN.	
General paralysis of the insane	43	General paralysis of the insane	5
Meningo-vascular syphilis ..	2	Meningo-vascular syphilis	1
Dementia præcox	3	Dementia præcox	2
Recent and recurrent mania	3	Insanity with epilepsy ..	1
Manic-depressive psychosis	1	Imbecile	1
Senile dementia	1	Secondary dementia (cerebral hæmorrhage)	1
Insanity with epilepsy ..	2	Acute melancholia ..	4
Recent melancholia ..	1	Recurrent mania	1
Confusional insanity ..	1	Delusional insanity ..	1
Paranoia	1		

The very marked increase in the incidence of those diagnosed as syphilitic is most significant, and constitutes a strong plea for the more general adoption of this or some similar method of examination. In practically none of the cases, save those suffering from general paresis or meningo-vascular syphilis, could syphilis have been diagnosed without a blood test, as none showed any typical lesions.

The part played by syphilis in the ætiology of the other psychoses, and the therapeutic effect of anti-syphilitic treatment, is not a question which I propose to discuss at present. It will be noted, however, that if the general paralytics are excluded only 6·7 per cent. of the remainder of the patients gave positive blood readings at the time of admission. The Royal Commission for Venereal Disease estimated that 10 per cent. of the urban population of Great Britain are suffering from syphilis.

Kovács,[5] of the State Asylum for Children, Szeged, Hungary, reports very favourably on his experience of the test when dealing with infants. He resorts to a Wassermann only when the individual reactions of the mother and child give opposite results. The test, therefore, would probably be of great service in pediatric work. It is not suitable for the general practitioner, as he has not the time or material to carry out the routine.

Summary.

The Meinicke micro-reaction, as used in this hospital, has proved a very serviceable and reliable test. It gives a high percentage of agreement with the Wassermann, and has almost doubled the number of those diagnosed as syphilitic.

My thanks are due to Dr. R. M. Clark, medical superintendent, who has supervised the test throughout for permission to publish these results, and to Mr. A. H. Fann, senior laboratory assistant, to whose careful technique it owes much of its success.

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Clinical and Laboratory Notes.

A CASE OF FACIAL NEURALGIA ASSOCIATED WITH PULMONARY ABSCESS.

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THIS case is considered worthy of record on account of the rare distribution of pain.

The Case Related.

The patient, a woman aged 39, was admitted to the Ventnor Hospital on April 17th, 1925. She gave a history of slight hæmoptysis at the age of 10 years. From 1914 onwards she had a cough and occasional attacks of staining of the sputum. In April, 1917, she had pneumonia of the left upper lobe with a very slow convalescence, a high temperature persisting until October of the same year. In January, 1918, another attack of pneumonia occurred, affecting the same part of the lung and again followed by slow convalescence. In March, 1924, one of us (R. C. H.) saw this patient with a definite pneumonic consolidation of the left upper lobe. From this time onward she had a very troublesome cough, slight fever running up to 99° and 100° F. nightly, and two ounces of sputum daily negative for tubercle bacilli. From 1919 till April, 1925, repeated attacks of slight hæmoptysis had occurred. On admission on April 17th, 1925, there were signs of a cavity in the lower and anterior part of the left upper lobe, such signs being present in the fourth and fifth spaces and occupying the normal area of cardiac dullness. The sputum was foul and had increased to three ounces daily. There was no clubbing. X rays showed a large cavity present in the lower and anterior third of the left upper lobe, probably adherent to the pericardium.

On April 27th a left-sided artificial pneumothorax was induced and continued, but the result was not satisfactory, the X rays showing a rigid-walled abscess cavity which showed no sign of collapse, although the peripheral lung was well collapsed round it (see figure). There was considerable mediastinal dislocation. On July 30th definite clubbing was noted. Thoracoplasty was suggested but refused. The pneumothorax was maintained as the patient appeared to be more comfortable during its continuance. In August a broad single diaphragmatic adhesion was noted, which appeared to pull on the abscess cavity. This was thought to be a possible additional cause of the troublesome cough, and with a view to eliminating its traction Mr. Harold Burrows performed a left-sided phrenicotomy on Sept. 20th, 1925. A note, made at the time of the operation, reads that something less than ½ in. of nerve was resected.

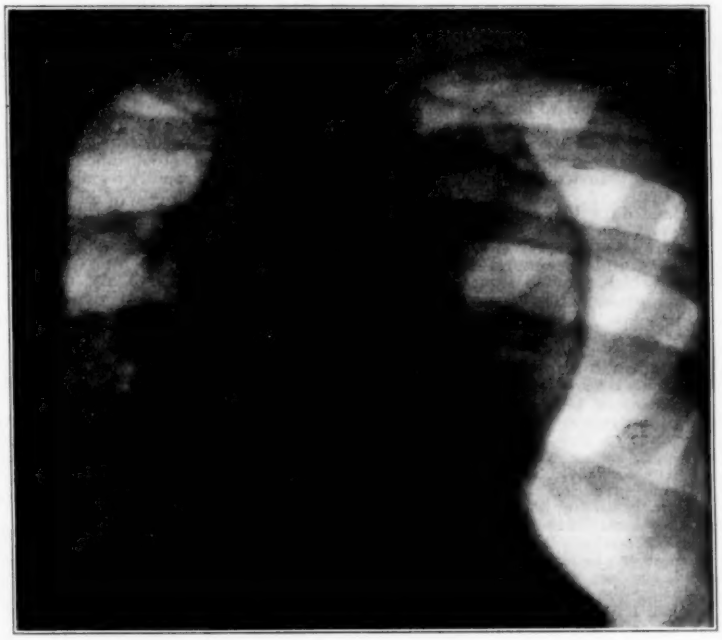
The X ray report on Oct. 3rd stated: "The diaphragm has not lifted in the chest. It shows paradoxical movement—inspiratory rise, very slightly expiratory fall. There is apparently a very definite lateral decrease in the size of the cavity." On Jan. 1st, 1926, the notes read: "Patient has neuralgic pain in the face which started last night. To-day has definite neuralgia of the left inner canthus and along the left nasal bone. Pain is most severe in the left nasal bone and occasionally there is a stabbing sensation along the inferior margin of the orbit. The left eye waters when the pain is severe. There is also pain and tenderness on pressure over the upper border of the left trapezius and in the hollow of the left shoulder."

The neuralgic pain decreased considerably after coughing and consequent expulsion of the contents of the cavity, and on some occasions disappeared altogether for a time. After a quiet night with little coughing the pain was more severe; for example, on Jan. 7th, 1926, the notes read: "Patient has not coughed during the night and now has intense pain in the face and nose." The daily sputum varied from 3 to 24 ounces. The neuralgia persisted until death occurred on March 20th, 1926. The relationship between the pain and decrease of expectoration was definite, the accumulation of secretion in the lung being invariably associated with the onset of neuralgia.

Cause of the Referred Pain.

Any explanation of the cause of the facial neuralgia and reflex pain in the shoulder must be founded on the assumption that the phrenic nerve was at that time capable of conveying afferent impulses to the

central nervous system. The mediastinal pleura is supplied with branches from the phrenic nerve, and the clinical history suggests that this nerve was dragged upon, or otherwise stimulated by the abscess cavity when this was full of pus. It is difficult, however, to understand how impulses could be conducted to the central nervous system by the phrenic nerve when it is recalled that half an inch of its length was excised in the neck about three months before the onset of the pain.



Radiogram showing the condition of the lung after artificial pneumothorax and before phrenicotomy. The large pulmonary abscess with a fluid level is not compressed, although the peripheral lung is well collapsed. There is considerable mediastinal dislocation, and a broad basal adhesion is present.

In the absence of a post-mortem it is only practicable to consider the possibilities, of which there appear to be three. The first is that some fibres have crossed the gap and descended the distal segment of the nerve to reach the vicinity of the abscess. Observations upon the regeneration of peripheral nerves under similar circumstances render this explanation highly improbable, since the interval between the two segments was so great. This explanation cannot, however, be absolutely excluded. The second possibility is that fibres from the distal end of the proximal segment have sprouted out into the surrounding deep tissues, and some have passed down between the fascial planes in the thorax and so extended to the neighbourhood of the abscess. This appears to be quite a reasonable possibility, as after section of a nerve it is well known that fibres grow out and will travel along fascial planes, although most of the fibres usually cause a reaction in the neighbouring tissues which leads to the creation of an "end bulb." A serious objection to this hypothesis is the short time which elapsed between the operation and the onset of the pain; it appears hardly long enough to permit regeneration of nerve-fibres from the level of the section to the abscess cavity. The third, and perhaps the most likely, explanation is the occurrence of an accessory phrenic nerve. This arises usually from the fifth cervical nerve, and after passing in front or behind the subclavian vein joins the main phrenic trunk near the thoracic inlet or in the thorax. This junction between the phrenic and the accessory phrenic would be distal to the level of the section of the former, and therefore a pathway from the pleura to the cervical spinal cord would persist after the operation. The occurrence of an accessory phrenic nerve is sufficiently common to render this suggestion highly probable.

Relation of Phrenic and Trigeminal Nerves.

It is easy to understand the referred pain in the shoulder, since it is only necessary to refer to the connexions between the central terminations of the accessory phrenic and the central connexions of the descending cutaneous branches of the third and fourth cervical nerves which are distributed to the skin in the regions where the pain was experienced. The occurrence of the neuralgia in the upper part of the face is of greater interest and must involve connexions between the phrenic and the central terminations of the trigeminal nerve. It is well known that the spinal nucleus and tract of the latter descends well into the cervical cord, at least as low as the second cervical segment, so that the central fibres of the two nerves are very near and likely to be connected. It has been shown by anatomical and clinical researches [1] that the caudal part of the spinal nucleus of the fifth nerve receives fibres only from its ophthalmic division; the most caudal part would be the segment nearest to the central fibres of the phrenic, and this probably explains the limitation of the neuralgia to the distribution of the ophthalmic division of the trigeminal nerve. A minor point of interest is the development of clubbing of the fingers and toes in sixteen weeks.

A somewhat similar case has been reported by Ricaldoni [2] in connexion with artificial pneumothorax treatment. In this instance the neuralgia was more widespread and this was considered to be due to the refilling of the pleural space. It disappeared with the discontinuance of pneumothorax.

A CASE OF TRAUMATIC PANCREATITIS.

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and
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House Surgeon to the Hospital.

A case of traumatic pancreatitis has lately been under our care in the General Hospital, Great Yarmouth. Medical literature in Great Britain has few records of such cases, the only one recently recorded to our knowledge is that of Waring and Griffiths.[3] Therefore details of our case may be of interest.

The patient was a Scotch girl of 18, from Stornoway, one of the fish-workers visiting this port during the herring fishing season, in the autumn. She was a strong, healthy girl with no history of previous illness or accident. On Oct. 14th she was caught between a wall and a lorry moving sideways towards her, which nipped her at the level of the upper half the abdomen. She was rapidly conveyed to hospital and admitted between 8 and 9 P.M. On examination,

[1] The Function of the Spinal Nucleus of the Trigeminal Nerve, by J. S. B. Stopford, Journal of Anatomy, 1924-25, lix., 120.
[2] Pneumothorax artificiel et névralgie de la face, A. Ricaldoni, Bull. et Mém. de la Soc. Méd. des Hôp. de Paris, 1921, 3e sér., xlv., 802; Abstract in Tubercle, March, 1922, p. 266.
[3] Waring, Sir Holburt, and Griffiths, H. E.: Brit. Jour. Surg., 1923-24, xi., 476.

no abrasion or bruise was present on the abdomen or elsewhere. She was suffering considerably from shock, with some diffuse abdominal pain. Temperature subnormal and pulse, 84, was thin. No signs of any gross lesion. She received the usual treatment for shock and was kept under careful and constant observation for any sign of internal hæmorrhage. The next morning the temperature was 98° F. and in the evening rose to 99°. She said she was free from pain and her general condition was greatly improved. The pulse was fuller. On the 16th her morning temperature had risen to 101° and the pulse-rate to 100, and she complained of vague abdominal pains, but the temperature fell to 99·4° in the evening and respirations increased to 40. On the 17th the temperature continued to fall, but the pulse increased in frequency, though still of good volume. The pain increased and was accentuated by ingestion of food and relieved by vomiting. The exhibition of bismuth and soda had no influence on the pain which was referred to the epigastrium.

For the next two or three days the pain continued at intervals, but the pulse and respirations diminished in frequency. The temperature was somewhat erratic but fell to normal with a pulse-rate of 84 and respiration-rate of 26 after a copious stool, which resulted from an enema given on Oct. 20th. In the evening the temperature rose to 101·6° with pulse of 100, but in the morning of the 21st it fell to normal again with pulse-rate 80 and respirations 24. During the next three days, though there was nothing alarming in the pulse and temperature, her condition became worse. She had a bad colour and the pain became so bad that morphia was given to relieve it on the 24th, when operative interference was suggested. As her condition was much worse on the 25th she agreed to an operation. The left upper rectus was rigid and very sensitive to touch or pressure. There was some general tenderness over the abdomen and some distension. The abdominal pain was very marked, but it was most acute under the left upper rectus. The respirations had risen to 46.

Laparotomy was performed on Oct. 25th. As the bulk of the pain and tenderness was on the left side, a paramedian incision was made through the left rectus. There was no sign of any damage to the abdominal wall. On opening the peritoneal cavity a little free turbid fluid was noted, but there was no escape of gas or marked odour. Two or three small areas of fat necrosis were seen close to the stomach, which was undamaged. The pancreas was found to be swollen with recent adhesions at its head. To obtain more easy access to the head of the pancreas and the gall-bladder a transverse incision was made across the middle line and through the right rectus, above the umbilicus from the middle of the primary incision. The gall-bladder was tense and somewhat hidden by recent adhesions. On gently freeing the gall-bladder with swabs pus was seen to ooze up from the direction of the head of the pancreas. The gall-bladder was freed from its adhesions and pus removed with swabs. A rubber tube was sewn into the gall-bladder, a corrugated rubber and gauze drain to the head of the pancreas, and drainage-tubes to the right kidney pouch and Douglas's pouch were inserted. The primary incision was sutured and all four drains concentrated in the middle of the second incision. After the operation she was in a state of great collapse with feeble pulse of 120, sighing respiration, and bad colour. Camphor and ether were administered subcutaneously and four-hourly rectal salines.

The next day, Oct. 26th, as her condition still remained very serious, five units of insulin were ordered twice daily, with glucose added to the salines. On the 27th her condition improved slightly, but she had tympanites, which was much relieved by a turpentine enema, which was followed by a loose, copious stool. On the 28th the drainage-tube to Douglas's pouch and the right kidney pouch were removed and as hiccup appeared eserine gr. 1/100 was given four-hourly. On the 29th she was much improved, so eserine was discontinued; but as the improvement disappeared eserine was again given.

During the subsequent period there was a free discharge of pus from the drain to the pancreas and the tube in the gall-bladder which at first discharged pure bile, then discharged bile mixed with pus and, later, almost pure pus. The skin round the drain was protected with zinc ointment and did not suffer from irritation as in the case reported by Delatour.[4] Her condition was curiously dependent upon the administration of eserine. When this was discontinued she rapidly became much worse, the pulse became feebler, though the rate did not increase much, her colour became bad and she had marked depression and lethargy. Simple enemata were given every alternate day with invariably good results.

On Nov. 5th the stitches were removed. On the 16th the tube from the gall-bladder and the drain from the head of the pancreas were removed, but bile and pus mixed continued to discharge from the sinus in gradually decreasing amount. As rectal salines were discontinued glucose was given by the mouth. From Nov. 26th her condition steadily improved, with colour returning to her cheeks.

General massage was instituted to improve her muscular tone and general metabolism on Dec. 7th. On the 16th the amount of insulin was reduced to five units once a day before the midday meal and this was discontinued on the 22nd. On the 13th she had been allowed to sit in a chair, and day by day she was given further opportunity for exercise in walking about the ward, and rapidly improved. The bowels acted normally without enemata from Dec. 27th onwards. She was discharged from hospital on Jan. 7th, 1928, with a perfectly healed scar and no sign of skin irritation around it. She stayed in the town a few days and then returned by easy stages of one day's travelling to far-off Stornoway. Nearly a month later she wrote and stated that she had continued to improve after reaching her home and was rapidly regaining her strength.

The only similar case of which we can find a record is the one of Delatour,[4] but there are many points of difference. They agree in the age and incidence and amount of shock after operation and pain on exhibition of food. They differ in the amount of initial shock, irritation of skin by discharge from drainage-tubes, and subsequent formation of a cyst.

The points to be noted in this case are: (1) The injury was not caused by a direct blow, but by a sliding squeeze, producing a shearing effect on a limited portion of the abdomen with no local marks on the skin. (2) The severity of the immediate shock differing from the cases reported by Waring and Delatour, and we suggest that this may have been due to direct irritation of the solar plexus. (3) The tardy development of the symptoms directly due to the pancreatic lesion. (4) The free discharge of pus from the gall-bladder drain. (5) The exhibition of insulin on the theory of rest and regeneration of the pancreas and to assist in the absorption and utilisation of glucose, the most easily administered nutriment. (6) The most ready and constant response to hypodermic injections of eserine when such generally accepted remedies as strychnine, camphor and ether and brandy were of no avail. (7) Despite the use of four separate drains and a discharge therefrom lasting some five weeks, there was a very sound abdominal wound, and as the bulk of this is above the umbilicus the risk of subsequent hernia is almost negligible. (8) There was no sign of any cyst-formation.

[4] Delatour, H. Beecham: Annals of Surgery, October, 1921.

New Inventions.

A CARBONIC ACID SNOW APPLICATOR.

In the application of carbonic acid snow to warts, moles, and small nævi the protection of the surrounding skin always presents a difficulty. The pressure of the snow pencil creates a temporary crater, the sides of which are inevitably frozen and blistered so that the consequent scar is larger than desirable. Moreover, it is not easy to apply it exactly to the tumour. To obviate these drawbacks I have had made to my design the applicator here illustrated. It consists of a circle of plate glass 2 in. in diameter, with an axial tube projecting 1 in. on one side, $\frac{1}{16}$ on the other. A solid glass rod to each packs the snow easily and tightly. The lumen of the tube is exactly applied over the small tumour and the plate held in position by two fingers of one hand, while the desired degree of pressure is maintained by a finger of the other on the end of the rod. The applicators are made in four sizes, $\frac{5}{32}$, $\frac{3}{16}$, $\frac{7}{32}$, and $\frac{1}{4}$ in. Nævi of more than $\frac{1}{4}$ in. in diameter can be treated with an unprotected pencil. I have used them with the greatest satisfaction both in private and in hospital practice. The intense cold does not crack or even chip the glass.

T. B. Sellors, M.D. Durh.

Medical Societies.

FEDERATION OF MEDICAL AND ALLIED SERVICES:

COUNCIL OF INDUSTRIAL MEDICINE.

THIS Council met on March 2nd under the chairmanship of Dr. D. A. COLES to discuss Industrial Accidents and Rheumatism. The Chairman explained that the Council's objects were to gather all the available knowledge and place it at the disposal of employers of labour with a view to reducing the great economic loss and human suffering caused by accident and disease. The International Congress for Industrial Accidents and Diseases, of which the Council was the authorised English Committee, would meet this year in Budapest.

Industrial Accidents.

Prof. E. L. COLLIS set out the advantages of treatment at a works clinic in saving both time and compensation costs. Whereas the ordinary surgeon dealt only with wound healing, the industrial doctor was skilled in the restoration of specialised function. The panel doctor to whom an injured workman was sent had either to imperil the healing of a wound by taking down the dressings, or to make himself responsible for a wound of which he knew nothing, and which might include cut tendons or nerves. The works doctor could prescribe suitable half-time work, and administer that sovereign remedy, "a hair of the dog," at a much earlier stage than the panel doctor. A clinic which organised treatment from first-aid to cure saved literally half a firm's compensation charges.

Sir PERCIVAL WILKINSON said that the object of the Order of St. John was to get as many men and women trained in first-aid as possible in all the pits, factories, and industries of the country. The "responsible person" whom the Factory Acts required to be in charge of a first-aid room should be properly defined in any new legislation, and his qualifications ensured by inspection; there should be a first-aid supervisor for each big floor and each building. In the best-run pits there was an organisation on every level and for every shift. There was an average of 62,000 accidents a year on each of the four main railways, and one of the most up-to-date Doncaster pits treated 80 accidents a year at pit-head.

Dr. DRUMMOND SHIELS spoke of the efficiency of the first-aid work on the railways, and the praiseworthy way in which the directors encouraged it, and Dr. SALISBURY SHARPE described the system on the Great Western Railway by which 10 per cent. of the men were trained in first-aid and their skill maintained by yearly courses.

Dr. ALFRED SALTER stated that in his work as medical officer to three trade-unions he found a constant source of difficulty in directing injured men to places where they could obtain after-treatment for, say, traumatic arthritis. A certain amount of massage, radiant heat, and the like was available at the London hospitals, but the enormous industrial dormitories on the fringe of London remained unprovided for, and unless the patient travelled up every day it was almost impossible to find treatment. This was often physically or financially impracticable. The result was that patients who might have been at work six weeks after an accident went on drawing compensation for months or years. The remedy he suggested was the establishment of central district and local clinics financed by a levy on the companies insuring against industrial accidents. Another great difficulty was that of finding light work by which a convalescent could be rehabilitated, and he saw no solution but the provision of gymnastics at these suggested industrial clinics.

Mr. HENRY LESSER, President of the National Federation of Employees' Approved Societies, extolled the system whereby in some large works a "jury" of representatives of the men and management sat to inquire into the cause of every accident that took place and to suggest means for preventing its repetition.

Mr. MAURICE SALMON, of Lyons', and Mr. C. R. PITT, of Debenhams', testified to the value of a clinic in a large factory and a department store respectively.

Dr. N. HOWARD MUMMERY compared the respective efficacy of the treatment of accidents at the factory, in hospital, and by private and panel doctors, in favour of the first method. In his own clinic, serving a factory staff of 6200, the records for the three months ending February, 1928, showed 2909 new injuries of all kinds. In only 179, just over 6 per cent., was any working time lost. 4716 out of 5060 redressings were done during continuous employment. The saving of working time and compensation was enormous.

Industrial Rheumatism.

Dr. FORTESCUE FOX said that the campaign against rheumatic diseases was now international. Their investigation and treatment presented big problems, and he would despair of success unless the many interests concerned—medical, official, industrial, and social—gave support to the Red Cross Society's effort to found a demonstration clinic in London. Among its other functions this clinic would deal with early cases which were at present left untreated, and it would also aim at ameliorating cases which were now regarded as incurable, thus preserving the usefulness and earning capacity of large numbers of workers.

Mr. LESSER bore witness to the effectiveness of continental clinics for the out-patient treatment of rheumatism. Statistics compiled by the insurance societies and employers showed that men returned to work much sooner than formerly. The clinics which the British Red Cross was proposing to set up would prove a boon to thousands of sufferers from this disease.

Dr. M. B. RAY dealt with the actual methods by which rheumatic diseases—he used the plural advisedly—should be treated. These complaints were profoundly influenced by climatic and environmental changes, and some people were more liable to them than others. The only possible inference was that the tendency was congenital. It had been found that the skin of rheumatically inclined persons was an insufficient protection against cold and damp, and although other causes, such as septic foci, played their part, the skin was the organ chiefly at fault in the production of these diseases. They occurred in certain persons who did not react favourably to their surroundings, and no organ was concerned so closely with the environment as the skin. Treatment should therefore be directed towards improving the activity of that organ, and should consist of hydrotherapy, manipulation, and exercise, in combination with heat, light, and electrical therapy. Up to the present time no concerted effort had been made to deal with this large body of sickness. Hospitals and spas could only deal with suitable cases who could travel to them. The British Red Cross Society proposed to bring the treatment to the patients, by establishing clinics accessible at all times in which patients could be treated after their working hours. Sufficient progress had already been made to start a demonstration clinic.

Dr. R. LL. J. LLEWELLYN said that he had been treating skins for 30 years and agreed with Dr. Ray's estimate of their importance. People were often asked how their bowels acted, but never how their skin acted, though it was equally important. In the prevention of rheumatism the care of the skin was the beginning of wisdom. It ought to be possible, and he thought it was possible, to "spot" potential rheumatic subjects, and these were the people towards whom preventive measures should be directed. It was useless to talk about preventing a disease that was already there. These subjects should be studied, not from the pathological, but from the physiological point of view, bearing in mind that the skin and the mucous membranes were the danger spots. The skin and the muscles were bound up reciprocally, and should interact with due balance.

ROYAL SOCIETY OF MEDICINE.

SECTIONS OF ANÆSTHETICS AND OBSTETRICS.

AT a combined meeting of these Sections on March 2nd Dr. CECIL HUGHES, President of the Section of Anæsthetics, in the chair, there was a discussion on

ANÆSTHESIA IN OBSTETRICS.

Mr. EARDLEY HOLLAND said that professional anæsthetists were now beginning to take an interest in the administration of anæsthetics in obstetrics, a branch which they had hitherto much neglected. The method used for this work, if it was to be generally adopted, must be simple and safe, and capable of being employed by those who had not had special training. It was necessary in this work that pain should be abolished, or materially diminished, over long periods of time, and the form of anæsthesia used must not lessen the force and frequency of the uterine contractions, nor endanger the life of the fœtus. Anæsthetics were used for two distinct purposes in this specialty: (1) to relieve the pain of labour; and (2) for obstetric operations, such as version and Cæsarean section. For the second purpose the most suitable anæsthetic was that which was best for operations in general; deep and prolonged ether anæsthesia, however, was undesirable for the fœtus, which was also very sensitive to morphia. This drug should not be given within two hours of delivery. He thought highly of stovaine, certainly for Cæsarean section, which it made almost bloodless.

Reverting to the relief of pain in ordinary or normal labour, Mr. Eardley Holland declared that every woman ought to be saved the pains of labour. The statement of the whole question by Simpson 81 years ago had not been improved upon since, and the only subsequent advance had been the Junker inhaler. If practising midwives could not alleviate the pains of labour, 75 per cent. of women must go on suffering in labour in this country, as that proportion were attended at the present time by midwives. This inability to relieve the pain of the mother was the great bar to the advancement of the midwife. He did not see any objection to midwives giving analgesic drugs, such as chloral and morphia. The anæsthetic requirements of the first stage of labour were different from those of the second stage. In the latter, especially in primiparæ, the pain was very severe. The pain in the first stage could easily be made tolerable by such drugs as chloral, or morphine and hyoscine together; but in the second stage a general anæsthetic was usually needed. Emotional conditions heightened the intensity of the pain, and the apprehensive state engendered by conversation about the perils of childbirth made it desirable to try to restore their confidence in the last months of pregnancy. The method of common use for anæsthetising these women was that of intermittent chloroform anæsthesia. This should not be given until the second stage had begun—certainly not until the first stage was nearing its end. As soon as it was evident that the pain of the uterine contractions was not being well borne, grs. 30 of chloral should be given or an injection of morphia and hyoscine. This, with a repetition of the hyoscine, carried the patient, with very little pain, on to the second stage of labour. At the onset of the second stage, chloroform was given by the Junker inhaler. This was not, he contended, sufficiently taught to medical students. The anæsthesia must not be deep enough to interrupt the uterine contractions. Under light anæsthesia, powerful bearing-down efforts were associated with perfect relaxation of the pelvic floor. There should be a deepening of the anæsthesia for the most painful part of the process of birth, when the head passed through the vulval orifice.

Dr. JOSEPH BLOMFIELD said the obstetrician tolerated, in labour, a condition of affairs—i.e., absence of anæsthesia—which he would not allow in any other surgical connexion. Even when an anæsthetic was used it was often left until too late, and was not skilfully administered. Every woman in labour should be free from pain from first to last. The absence of the anæsthetist from such a large proportion of these cases was simply due to the fact that he had not been asked to coöperate. In certain cases nitrous oxide and oxygen was the ideal anæsthetic, but it must be administered by somebody familiar with the apparatus, and generally home conditions were not very suitable for it. For some it was an inefficient anæsthetic, and these women would only become excited with it. He agreed with Mr. Eardley Holland that the anæsthetic for general use was chloroform, as it was almost invariably successful. He had not had experience of the synergistic method, which was advocated and used in the United States—namely, the use of morphia and magnesium sulphate, followed by ether and quinine per rectum. He had found that ethyl chloride was a very useful drug when the pains began, and its effect could be reinforced by very weak chloroform.

Mr. WILLIAM GILLIATT agreed that certainly when the doctor was working with single-handed assistance chloroform was the favourite anæsthetic. Ether seemed to diminish the strength of the uterine contractions and so delayed the birth of the child. Not only had the woman in labour the right to be saved pain, but the obstetrician preferred that the woman should be lying still, for then it was easier to keep the operation aseptic. Chloroform was more potent and acted more quickly than ether; but gas-and-oxygen, with the addition of a little ether, was best during the passage of the child's head. It stimulated rather than checked the uterine contractions and any vomiting was but slight. There was some danger of chloroform poisoning if that anæsthetic were used, and if any toxæmia was already present that drug might increase it. The danger of trouble was increased if the patient were given more than one kind of anæsthetic for the labour and a complication. He gave details of five serious cases, two of which ended fatally, one in 36 hours, the other in 15 hours. When spinal anæsthesia was used for a patient for whom inhalation would be dangerous, no inhalation should be given at the same time. In his maternity wards he now used ether.

Dr. H. A. RICHARDS said the choice of the anæsthetic should depend on the state of the particular patient. He agreed that if a patient had previously been given an anæsthetic no subsequent anæsthetic should contain chloroform. For a second anæsthetisation gr. 1/100 atropine should be given half an hour beforehand, then ether. If the patient was accustomed to being violently sick, nitrous oxide and oxygen should be used when she seemed to be unduly apprehensive of pain. For Cæsarean section it was best not to give any chloroform at all. Twilight sleep did not come into the range of the discussion, as it was not an anæsthetic. His objection to using ethylene in private practice was that there was usually a fire in the room, and it was a very explosive substance.

Mr. H. E. G. BOYLE spoke highly of the skilled administration of gas-and-oxygen by Dr. Wesley Bourne at Montreal; from this he had gained the impression that it was one of the finest of all anæsthetics. After obtaining the patient's confidence one could produce by this mixture a condition of analgesia in which the patient would do just what she was asked to. Certainly it did not diminish the propulsive efforts of the uterus. When the woman bore down well it shortened the duration of the labour. Ether could be used just when the head was being born, and then a mixture of CO_2 and oxygen could be given for a few minutes. He would like to see gas-and-oxygen more used in obstetric practice in this country.

Dr. H. BECKETT-OVERY said he did not know whether specialists appreciated how much some patients suffered after their confinement—sometimes for months or years after delivery. Even after an uncomplicated confinement some women suffered severely from shock, and if it could be shown that there was a general anæsthetic which was available for all purposes, it was, he considered, the doctor's

bounden duty to use it. In the case of women whose os was dilating rapidly he at once gave hyoscine and morphine, a measure which seemed to quieten the emotions, so that by the time the second stage was reached the patient was able to use the chloroform herself. He hoped that the old attitude that it was not necessary to use an anæsthetic for women in labour had now passed from the profession for good. In quite 70 per cent. of the cases he did not think a small quantity of an analgesic drug brought about any appreciable delay in the birth process, and it was a considerable gain to the patient, as the head could be delivered without any laceration.

Dr. S. A. S. MALKIN (Nottingham) spoke of the synergistic method—i.e., administration of morphia and magnesium sulphate, followed by the rectal instillation of ether and quinine in olive oil. The American view of it was that only a small dose of morphia was given and that the magnesium sulphate kept the action more effective and over a longer time. The quantity of ether needed was also small, and it was said that the administration could be rendered so automatic that the constant attention of the obstetrician was not required. He had used the method in 20 cases, of which 12 were entirely successful—i.e., the patient slept between the pains and stirred only with the pains. In some cases the woman had not known when the child was born. In one case there was excitement, in two the method failed completely, in one he gave the morphia rather late, the second stage supervened quicker than he expected, and the child was born blue. Now that he was better acquainted with the technique he felt certain of securing a large percentage of successful cases with the method, which, he was convinced, possessed advantages.

SECTION OF ORTHOPÆDICS.

A MEETING of this Section was held on March 6th, Mr. W. ROWLEY BRISTOW, the President, in the chair, when Mr. HARRY PLATT read a paper on the

TREATMENT OF ACUTE OSTEOMYELITIS.

The literature, he said, offered conflicting advice, usually based on very small series of cases collected over very long periods. The outstanding contribution to the subject in the last decade had been made by Clarence Stau, of Toronto, who had recorded 207 cases at the Children's Hospital during 12 years. The greatest mortality occurred in the age-group 10–15, and was twice as great in males as females. Mr. Platt's series at Ancoats Hospital, Manchester, numbered 41 in five years. He then outlined the anatomy of the blood-supply of growing and adult bones on which the infective process depended. The acute osteomyelitic process began in the metaphyseal cancellous tissue just under the epiphyseal disc, because of the "end-artery" system and sluggish blood-supply. The focus rarely spread into the joint, but more often to the subperiosteal space and thence along the surface of the shaft. The "gutter" operation had been based on the erroneous belief that spread occurred early along the medullary canal. The Toronto school had shown that the cancellous tissue of the metaphysis offered considerable opposition to the spread of infection, and that the juxta-epiphyseal focus remained small and localised when the periosteum was extensively stripped. The medullary canal was invaded late, and through the Haversian canals from the subperiosteal space. This fact had been established by the most convincing experimental, clinical, operative, and post-mortem observations in Toronto, and Mr. Platt had confirmed it in his own series. In older children there might be atypical localisation, especially in the radius and ulna, and occasionally in the fibula, the infection reaching the bone by the nutrient artery and spreading up and down the medullary canal.

Early and Differential Diagnosis.

There were two main clinical groups: those in whom local and constitutional signs appeared abruptly after two or three days prodromal period, a phase which might indeed almost be non-existent, and those in whom the prodromal stage lasted three or four weeks with important localising signs which all too often passed unnoticed. During the prodromal stage a tiny juxta-epiphyseal focus was smouldering. The signs were fixed pain at the end of a long bone and metaphyseal tenderness, which might be accompanied by intermittent limp and general seediness. In these cases diagnosis should be increasingly possible in the future, if the significance of the localising signs were more widely appreciated. In the next phase the signs became more insistent and bony swelling was added to them; the juxta-epiphyseal focus was just reaching the periosteal space. Unfortunately, this was often taken for some other acute infection, usually rheumatism. Yet there was a marked distinction between the joint pain, tenderness and muscular spasm of rheumatism, and the painful, thickened, tender metaphysis. It was important to decide whether indeed there was such a thing as acute monarticular rheumatism, and, if so, how common it was, in order that students might be taught to think first of acute osteomyelitis. An early exploratory puncture was a minor operation which did no harm if the diagnosis were not confirmed, and might save many lives and limbs. Special diagnostic difficulties and high mortality were presented by osteomyelitis of the flat and hidden bones. In the pelvis the ilium was usually affected, and there was early extra-osseous spread and large intermuscular abscess, or the infection might spread widely in the diplöe. Pain and tenderness might be absent or inconspicuous, and the condition should be suspected in any acute toxæmia without localising signs. There might be referred pain down the thigh, pelvic tenderness, or a sense of resistance between the trochanter and the iliac crest. Mr. Platt urged exploratory puncture without delay in every suspicious case.

Treatment.

The principles governing treatment were: (1) early and efficient drainage and early sterilisation of the wound; (2) avoidance of further devascularisation of infected and uninfected bone, and infection must not be introduced into uninfected areas during operation; (3) systemic infection must be combated by all forms of general and specific treatment, such as immune transfusion and intravenous antiseptic medication.

Operations could be regarded in terms of drainage. Subperiosteal and metaphyseal drainage in the early stages gave excellent results. Subperiosteal drainage alone was usually insufficient, and could only be regarded as a minor procedure of urgency in patients who were too ill for anything else. The cavity should be lightly sponged out, but no curettage should be done. Of Mr. Platt's 41 cases, 22 had been treated in this way and 14 had healed without sequestration. There was no justification for the "gutter" extension, which should be condemned as futile and dangerous. The gutter operation, or diaphyseal drainage, had its indications when the medullary canal and cancellous tissue were widely affected, as when the process had started in the centre of the shaft or in neglected cases of primary metaphyseal infection. Of the four cases so treated by Mr. Platt one had died and two had had extensive necrosis and chronic suppuration. On the subject of subperiosteal resection of the diaphysis Mr. Platt's mind was "open and to let." The procedure must compete satisfactorily with conservative operations if it was to be accepted. In theory it was better than the gutter operation for neglected cases when the shaft was riddled with infection.

Primary Resection.

Mr. ALEXANDER MITCHELL spoke of the importance of blood culture on admission. Simple incision was universally disastrous, except in the mild type of pneumococcal osteomyelitis. In an early case of septic osteomyelitis of a long bone he had found that

removal of a piece of the cortex for drainage gave a good intermediate, and in most cases a good end-result. Resection in subperiosteal infection had not received the attention it deserved. Extensive resection of the humerus, tibia, or femur was not, however, very satisfactory. His practice of resecting the whole length of an infected shaft must be regarded as an alternative to amputation. In 90 per cent. of cases, with careful after-treatment by extension and early muscle exercise, a good result would be ensured. It was very important to get the tibialis anticus, or interior muscles of the leg, to act early. Plaster or tight splints were almost sure to prevent regeneration, but if the limb were kept in a Thomas splint with a certain amount of extension, but not fixed in such a way as to prevent voluntary movement, regeneration was almost sure to follow. Two days after operation the packing should be removed and a periosteal suture done, except for a gap at each end for drainage-tubes. The bone should then be treated with eusol or flavine. Another argument against resection was the high mortality, but in a series of 70 cases treated during the last five years primary resection had been performed 13 times with only one death, a patient with active septicæmia. The total number of deaths was ten. The risk of removing a large sequestrum was much greater than that of a primary resection. Subperiosteal resection was not a routine treatment, but it had a place, and suitable cases could be recognised by the experienced surgeon. He had not seen any good follow blood transfusion in acute osteomyelitis. He had never seen a case in private practice, although he would expect the hospital child to be less liable to bone infection. He strongly agreed with the importance of impressing upon students the gravity of the disease and the need for early diagnosis, particularly of making a routine examination of the ends of the long bones in children with an unexplained rise of temperature.

Mr. ERIC LLOYD described a series of 29 cases from Ormond-street Hospital, all of which had been under his personal care. The *Staphylococcus aureus* was the cause in a very high proportion (19 cases) and was much more lethal than the streptococcus. Only one was due to the pneumococcus. Eleven had died. The lower limbs were involved far more often than the upper. None of the cases gave negative blood culture, and there was a high incidence of cardiac complications: pericarditis, pyopericardium, and ulcerative endocarditis. Treatment should be something between the "gutter" operation and the periosteal incision, leaving only a portion of the circumference to act as a splint. The pendulum had, perhaps, swung a little too far away from amputation. Blood transfusion and intravenous medication had been tried, without striking results. Some of the streptococcal cases seemed to make a remarkable recovery however they were treated, while some of the staphylococcal ones made no effort in spite of every kind of help. Diaphyseal excision had not been generally practised recently.

Mr. W. H. OGILVIE showed the records of 51 cases from Guy's Hospital from 1922–26. Acute osteomyelitis was one of the decreasing diseases. The preponderance of male cases was great, but varied in different localities. Sixty-eight per cent. of cases were between the ages of 8 and 15. The upper end of the tibia showed the greatest incidence, followed by the lower end of femur, lower end of tibia, and upper end of humerus. The mortality was 21 per cent., and 51 per cent. were discharged unhealed. Amputations accounted for 8 per cent., and 16 per cent. were sent out healed. There had been three cases of disease of the ilium, of whom one had died; the mortality from infection of the femur was low, because signs were earlier in that region. The series showed favourable results from radical ("gutter") operation. The mortality was not so much a question of treatment as of the virulence of the disease, which varied enormously. The average time between the onset of symptoms and admission was 7·4 days. The difference between the adult and childish type was shown strongly; in the adult the infection was apt to be latent, the symptoms less severe, and the course much more favourable and quieter. The average time in hospital was three months. Ninety-two per cent. of the organisms were *Staphylococcus aureus*, admittedly the specific organism of osteomyelitis in London; the Edinburgh figures differed from those of other centres. Joints were very frequently affected, but this was more a feature of pyæmia than of osteomyelitis as such. In severe cases the heart and pericardium were often attacked. It was impossible by clinical means to tell the amount of present or future necrosis, what bone was healthy, and what would survive, and where resection should stop. Bone death was always liable to appear at the edge of the operative interference. Operation should take into consideration the future problem of repair as well as the immediate problem of infection. All bone which did not die was a potential source of bone cells, and wide resection might be harmful. He condemned diaphysectomy. Infection in the early stage was mild, and only dangerous because it was in an enclosed space and the blood-vessels were sinusoids through which pus easily passed into the circulation. Therefore the drainage operation should lay open only the area infected. The usual operation produced an extensive wound with painful dressings and protracted healing, leaving a wide scar adherent to bone and always liable to break down. To avoid this Mr. Ogilvie operated through a flap so that the skin scar did not overlie the bone scar; he removed compact bone for the whole extent of pus formation and at least one-third of the circumference. He left the medullary cavity alone, save for removing loose portions, and inserted a series of Carrel tubes without packing. The skin was then closed with interrupted silkworm sutures about an inch apart. This method had all the advantages of the open and the closed operation. He did not believe in radical secondary operations, which only produced temporary relief. Operation was only justified for abscess or sequestrum. He preferred to insert a silver wire down to the bone, keeping it in place with strapping. The patient could remove this daily. There was very little discharge, and it stopped the tension in the deeper parts and abolished the intermittent bouts of fever. Transfusion was no use in acute sepsis.

Mr. N. DUNN described a case of osteomyelitis of the spine, and Mr. ALAN PERRY described his experience at the London Hospital, where 75 per cent. of cases gave a positive blood culture. He regarded the cases as pyæmic from the beginning rather than as localised foci. Diaphyseal excision had been a failure in his hands, yielding no regeneration in most cases.

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.

A QUARTERLY meeting of this Association was held at the City Mental Hospital, Fishponds, Bristol, on Feb. 16th, Dr. HAMILTON MARR, the President, being in the chair. A paper dealing with some points in the

Histology of the Globus Pallidus.

was read by Dr. E. BARTON WHITE. He said that among the changes in the globus pallidus in various diseases several authors referred to striking changes in the walls of the blood-vessels of that body, manifested as a deposit of an amorphous material in their outer walls, often sufficient in amount to obliterate the muscular and elastic fibres. It looked like calcification. Half the hundred cases examined by Weston Hurst at the National Hospital, Queen-square, showed this change in the vessels, sharply limited to the anterior half of the globus pallidus. The ages of the patients ranged from 20 to 81. Hurst found that the material was not calcium, but a large portion of it

was easily stainable iron. The material was also found lying free in the corpus striatum. Hurst considered that the deposit did not represent a senile change, and that it was not related to arterio-sclerosis, and in some of the cases he could find no pathological change in the nerve-cells of that nucleus. These deposits seemed to show, in Hurst's view, a proclivity of the globus pallidus to degenerate in the second half of life. Dr. G. Hadfield had shown that acute bilateral necrosis might affect the part of the globus pallidus in which the vascular change was found, and that a rich deposit of iron salts was present in the walls of the vessels of the pallidus in half the persons examined who had no chronic nervous disease, their ages being over 30. Dr. White's own figures corresponded with these. He submitted, as his conclusion, that the deposition demonstrated was as frequent in all forms of mental disorder as in chronic neurological cases and as in normal brains, and that, therefore, it could not be regarded as pathognomonic of any particular nervous disease, as some had previously contended.

Dr. GEOFFREY HADFIELD said the deposit spoken of was not a minute microscopical quantity, but could be easily made out with the aid of a hand lens. Many had concluded that the change in the vessels was pathological and that it caused, or largely contributed to, neurological signs and symptoms; it had, for instance, been put forward as a cause of post-encephalitic Parkinsonism, also as playing a large part in the causation of paralysis agitans. The change must be related to the fact that the globus pallidus was very rich in iron salts, as could be readily seen by putting a slice of brain into ferrocyanide of potash and hydrochloric acid, when it rapidly became a deep blue. An investigation led him to the conclusion that the iron which appeared in the vessel wall came from the nucleus itself—i.e., it was intrinsic iron—and he also considered that it was derived from a precursor in the nucleus which did not stain. The site of the deposit in the nucleus strongly suggested that the process was actually a degenerative one. It was, he said, tempting to think that perhaps the globus pallidus was a vestigial structure, which was undergoing evolutionary atrophy. There seemed to be no specific association with diseases. It was possible that this deposition of iron might predispose to disease; it certainly would alter the permeability of the vessels. The condition always seemed to be absent in children, but in old people it was frequently found.

Prof. EDWARD FAWCETT said he was unable to throw any light on the subject of this paper. He agreed that the globus pallidus was one of the oldest parts of the encephalon. Dr. Hadfield's suggestion that it was a degenerative process which resulted in these depositions seemed fairly sound.

Dr. J. R. LORD spoke of the importance to psychiatrists of the basal ganglions as probably the seat of the central nervous mechanism of the emotions. Dr. John Brander at Bexley had investigated the presence in the brain of iron in cases of general paralysis, and had discovered that it was present in great quantities. He understood, however, that Dr. White had not arrived at the same conclusion. The presence of the iron in the globus pallidus, he thought, might indicate a regression of function, and that indeed the structure was a dying one. The extent of regression would vary in individuals.

Dr. G. E. PEACHELL asked whether Dr. White had investigated the brain of a patient who died of pernicious anæmia, and, if so, whether iron was found in that case. Also whether there was any analogy between the reaction which was found in the globus and the staining and pigmentation found in the brain after hæmorrhage.

Dr. WHITE, in reply, said that in one case of four dying of general paralysis there was certainly no iron deposited.

Dr. HADFIELD, in reply, said he had not examined any cases of pernicious anæmia, but in that disease the pigment was taken out of the blood by a phagocyte. In the cases which had been examined there was no reason to suppose there was any excess of iron in the circulating blood. Neither was there excess of iron in the pathological series as opposed to the normal. He believed the deposition took place apart from any phagocytic cell action. And he thought hæmorrhage could be eliminated as a cause of the pigmentation or the change in the globus pallidus, as in the majority of these cases there was no sign of a pathological lesion.

Dr. CAREY COOMBS read a paper on the

Mental State in Cardiac Disease.

He said he had reviewed about 2000 cases of cardiac disease, and from them he had drawn certain inferences as to the connexion between such disease and mental disorder. His ideas he put in the form of answers to the following three questions: (1) Is there evidence that mental disorder causes cardiac disease? (2) Do the circulatory disturbances arising from cardiac disease often upset the mental functions? (3) How far are both cardiac disease and mental disorder, when they occur together, due to a common cause? In the war mental disturbance was often the chief factor in causing functional tachycardia; and mental stress and worry were appreciable factors in producing high arterial tension. He did not believe there was any form of heart disease which arose out of mental disorder. With regard to whether cardiac disease could be directly responsible for mental disorder, he had been struck by the absence of unimpeachable evidence in support of such a view. Still, severe cardiac disease was so terrible to contemplate that it might well upset the mental equilibrium of the person concerned, and also the deficiency in the cerebral circulation might result in mental trouble. It was rare to find insanity as a sequel of rheumatic heart disease. The incidence of insanity in uncomplicated heart disease was not higher than that of insanity in the general population. There were some conditions in which mental and cardiac symptoms appeared together, and might be ascribed to a common cause. In persons with senile heart disease, for example, the failure of the heart to supply blood adequately to the periphery was only one of many straws whose combined effect was to break the camel's back.

The PRESIDENT thought there would be general agreement that heart disease per se seldom caused mental disorder; and that when mental disorder followed heart disease it could usually be ascribed not to heart conditions but to the circumstances which brought about the diseased state—i.e., the autotoxic or microbic effect on the blood. With regard to cardiac conditions affecting the mind, it was usually the mental condition which caused the functional aberration; that was certainly so in many of the cases of shell-shock during the war; the cardiac condition usually came on after mental exhaustion.

Dr. LORD agreed with the President's remarks. The action of the heart was very much involved in the psychoneuroses and the neuroses. Insanity was so closely associated with the toxæmias that it was difficult, in a given case of acute insanity, to decide whether the cardiac condition was due to the mental state or to the accompanying toxæmia.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES.

AT a meeting of this Society held on Feb. 24th, with Colonel L. W. HARRISON in the chair, two papers were read on the

Treatment of Gonorrhœa in Pregnancy and in the Puerperium.

Dr. MARGARET RORKE dealt with *antenatal treatment.* She said it was now a matter of course for every upper middle-class woman in London to visit her doctor, not once but many times, for examination and advice

during pregnancy, whilst free antenatal clinics were now popular with the wife of the wage-earner, who took it for granted that she should undergo careful examination during this period. The change in public opinion during the last 10 or 12 years was astonishing. This being so, it was natural that as time went on the standard examination of the expectant mother should be more exacting. In most of the modern antenatal clinics almost any discharge occurring in pregnancy was investigated at once by the venereal diseases department, but there were five or six types of discharge commonly seen in addition to true gonorrhœa. Of these a discharge attributable to *Bacillus coli* infection was the commonest, and possibly it was more dangerous in its end-results than gonorrhœa itself. No patient, said Dr. Rorke, required more careful handling than the pregnant woman with gonorrhœal infection. If she was unmarried and deserted, a sense of utter helplessness overcame her; if she was married and realised that she was the victim of her husband's infidelity she suffered from wounded pride and bitter resentment. A correct understanding of the woman's psychology was very important to effective treatment. The first step was to have one, and if necessary more than one, Wassermann test carried out to ensure that she had not got syphilis as well as gonorrhœa. In all acute cases the patient ought to be immobilised by rest in bed, and the need for complete evacuation of the bowels, daily or twice daily during pregnancy, and of strict cleanliness, including the daily bath or wash down, should be impressed upon her. After instancing the various methods of treating the condition, Dr. Rorke referred to the value of diathermy where there was persistent infection of the urethra; it was useful to clear up the urethra in a patient awaiting delivery. The conditions to be aimed at were that there should be no ophthalmia neonatorum in the child, that the mother's pelvis in the puerperium should be in as good condition as that of a non-infected mother who had had the same type of delivery; and that complete cure of the infection should be brought about by continued treatment and supervision.

Prof. LOUISE MCILROY gave an outline of the working of the system of coöperation between the obstetrical unit and the venereal diseases department at the Royal Free Hospital. During labour vaginal examinations and operative interference were to be avoided as much as possible. Lacerations of the vaginal walls and cervix were the commonest cause of puerperal sepsis. During the third stage of labour the uterus should not be massaged unless hæmorrhage occurred, as sepsis might extend upwards from the membranes in contact with the vaginal secretion. Pyrexia in the puerperium occurred more often in gonorrhœal than in non-infected cases. Acute sepsis did not occur unless pyogenic organisms followed in the track of the gonococci. In the treatment of septic conditions free drainage of the uterus was essential and exploration of the cavity was only to be carried out if retention of portions of the placenta was suspected. Intra-uterine douching should not be permitted and patients should be kept in the open air as much as possible. Antistreptococcal serum was beneficial and, where extension of sepsis had taken place, intramuscular injections of quinine had value. She concluded by showing some tables of 322 cases treated at the Royal Free Hospital and gave full details of the deliveries and the puerperium. There was spontaneous labour with normal puerperium in 197 cases, and in the whole series there was not a single maternal death. It was interesting to note what happened to 34 infants whose mothers had combined infection of syphilis and gonorrhœa. Of these children 24 were satisfactory after spontaneous deliveries, 5 had ophthalmia neonatorum, 1 was stillborn, 2 were macerated, and 2 died shortly after birth.

Dr. EDITH HALL quoted cases showing the risk of very severe sepsis as the result of manipulation in the presence of gonorrhœa. She doubted whether it was justifiable in that condition to consider induction or Cæsarean section.—Dr. DOROTHY LOGAN emphasised the necessity of leaving off treatment very gradually, as a safeguard against relapses.—Dr. FOWLER WARD commented upon the rarity of interference in obstetric practice 20 years ago, and advocated minimal interference in childbirth where there was gonococcal infection.—Prof. F. J. BROWNE said that gonorrhœa in pregnancy was rather difficult to define. Were all cases which had a discharge in pregnancy to be regarded as gonorrhœa? If not, a good many cases of true gonorrhœa would be missed. But if all cases with a discharge were treated on antivenereal lines many patients would come to the venereal department who had not gonorrhœa at all. He did not like the idea of separating venereal from ordinary patients.

Dr. RORKE, in reply, said that she would define gonorrhœa in pregnancy as a discharge, showing the gonococcus, either from the urethra or the cervix, and she would consider a persistent discharge in pregnancy, not yielding easily to treatment, as probably gonococcal with secondary infection.

Prof. MCILROY said she could not agree with Prof. Browne that these patients should be nursed in common wards. The people in attendance had to be considered. She had known a nurse acquire syphilis because she was not aware that the patient, who was not in the venereal ward, was infected, and nobody had taken the trouble to tell her. Another objection to bringing these patients into the common ward was that a large number of them were unmarried women, and some were of the prostitute class, and it was not possible to mix them up with decent married women occupying ordinary maternity beds. She agreed, however, that venereal wards should not be labelled as such.

Reviews and Notices of Books.

X RAY PHOTOGRAPHY.

Kontrast und Schärfe im Röntgenbilde. By Dr. med. WILLEM BRONKHORST, Senior Physician, Berg en Bosch Sanatorium, Apeldoorn, Holland. Done into German by Dr. HEINZ LOSSEN, Schatzalp-Davos. Leipzig: Georg Thieme. 1927. Pp. 104. M.16.50.

THE quality of a radiogram is determined by the degree of contrast between its several shadows and by the sharpness of their edges. These two factors are influenced by several variables. Thus contrast depends on: (1) intensity of the X radiation; (2) penetrating power of the rays; (3) thickness of the object and of the media surrounding it; (4) presence or absence of intensifying screens; (5) scattered radiation; (6) chemical composition of the film emulsion; (7) nature of the developer; (8) temperature of the developer; (9) time of development. Sharpness in its turn depends on: (10) size and nature of the focal spot in the X ray tube; and (11) relative distances of the focus and the object from the film. Although the photographic factors (6), (7), (8), and (9) have of late been eliminated through standardisation of dark-room technique, seven variables remain, each of which has a bearing on either the contrast or the definition in the X ray negative.

Dr. Bronkhorst may be congratulated on the trouble he has taken to separate the effects of these seven factors from one another, thereby unravelling a nasty tangle and sorting out the strings which govern the making of a negative for any radiologist who cares to learn how to pull correctly. The first part of the book deals with contrast. The author used a set of aluminium steps, increasing in thickness from 0·5–12 mm., to represent the object which was placed between two layers of water varying in thickness from 2–6 cm. This represented the surrounding tissue. By subjecting this arrangement to X rays of four different compositions (55, 66, 77, 88 kv.) and by working with and without intensifying screens and a Potter Bucky diaphragm, he alters,

in turn, every one of the first five factors mentioned. The results are recorded in a set of curves arranged to permit of comparison and discussed in the text.

Some of the most important of the many interesting results which Dr. Bronkhorst found have been known from empirical experience, but are here traced to their origins. Thus he finds that radiograms are rarely dense enough—i.e., that intensity of radiation or time of exposure should be increased—and that viewing boxes should be much more brightly illuminated. Furthermore, he finds that where scattered rays are not removed soft rays should be employed, and that intensifying screens, apart from reducing the length of exposure, add greatly to the contrast in these circumstances. He also finds, however, that the elimination of scattered rays by a Potter Bucky diaphragm more than doubles the contrast, that this applies to both thick and thin parts of the body, that under such conditions hard rays are preferable to soft, and that though intensifying screens do not affect contrasts when scattered rays are absent, they are of great importance in reducing times of exposure.

In the second part of the book the author deals with definition and explains the cause and effect on it of what astronomers call penumbra. He draws attention to the loss of detail caused through small objects being so far from the film that the cone of absolute shadow is at an end before the rays reach the film. It might perhaps have been better to express the effect of distances and size of focal spot in terms of definition, rather than of blurring, since, as he points out, the former is merely the reciprocal of the latter; the more so as in discussing the effect of depth he refers to definition and not blurring. At the end of the book is a discussion of methods of measuring, not only the size, but also the shape and nature of focal spots; and here the results are very surprising and thought-provoking.

The book is a valuable contribution to a difficult subject and is particularly commendable for the simplicity of the apparatus used, the logical nature of the deductions, and the clearness of presentation The translation from Dutch into German has been well done, with only an occasional mannerism. The printing and illustrating leave nothing to be desired.

THE EXPECTANT MOTHER.

Advice to the Expectant Mother on the Care of Her Health. Second edition. By F. J. BROWNE, M.D., D.Sc., F.R.C.S. Eng., Professor of Obstetric Medicine in the University of London. Edinburgh: E. and S. Livingstone. 1928. Pp. 48. 6*d*.

IT is no matter for surprise that a second edition of this little book should be called for within a few months of the first. The author has succeeded in giving, in 38 pages, advice covering every important point on the care of the expectant mother, the preparation for confinement, and hints on breast-feeding and care of the baby. The book has been thoroughly revised and some new matter added, chiefly in the last chapter, on the general care and clothing of the baby. Perhaps, in a future edition, the author might include a chapter on the care of the mother during the puerperium. The book is presumably written for middle-class mothers—e.g., the novels of Sir Walter Scott are recommended as a cure for sleeplessness—but the explanations and directions are so simple and practical that almost any clinic mother would understand them. The teaching is on common-sense lines, and is that given in most up-to-date welfare centres. The only statement in the book to which exception might fairly be taken is that failure to thrive in a breast-fed baby is never due to poor milk. Such cases may be rare, but they do undoubtedly occur. Analysis of the milk shows a definite and sometimes marked deficiency in fat, which amply accounts for the baby's failure to gain weight. Apart from this small point, however, we have nothing but praise for the book, which deserves a wide circulation, and would be cheap at double the price.

THE NATURAL HISTORY OF A SAVANT.

By Prof. CHARLES RICHET, Membre de l'Institut. Translated from the French by Sir OLIVER LODGE. London: J. M. Dent and Sons, Ltd. Pp. 155. 5*s*.

IN his deft dissection of the character of the savant, Prof. Richet often reminds us of his great countryman, Voltaire, in his most playful mood. It is true that the description of a savant as given by Prof. Richet belongs more to the men of his own country than to those of ours, and it is characteristic of the French intellect that a French savant should be able to describe his class with such facility and charm. His definition is rigorous, for according to him a savant is one whose sole aim is the search for truth to the exclusion of everything else, even to the exclusion of the practical results of his labours for the benefit of mankind. Subjected to this test, Newton and Darwin would be accorded niches in the professor's temple of fame, but the position would be denied perhaps to Kelvin, and Bacon's conception of gathering the fruits of science for the use of mankind might possibly exclude him from the temple of the elect. One of the most entertaining chapters is that which analyses the character of savants under a series of assumed names. Prof. Richet brings his luminous analysis to a close with two eminently sound propositions—viz., that "the welfare of mankind depends upon science," and "the progress of science depends upon savants"; carrying with them the necessary deduction that the savant must be cared for.

The translation of this delightful little book has been ably performed by Sir Oliver Lodge, who has entered thoroughly into the spirit of delicate irony which pervades it.

PRACTICAL PHYSICS FOR MEDICAL STUDENTS.

By MARY D. WALLER, B.Sc., Lecturer in Physics, London (R.F.H.) School of Medicine for Women. London: H. K. Lewis and Co., Ltd. 1927. Pp. 95. 6*s*.

IN Miss Waller's book is to be found the outline of an elementary course in practical physics. It is, in fact, the course followed by students at the London School of Medicine for Women who are preparing for the London or Conjoint qualifications. As the author states, this work is done in conjunction with demonstrations which, no doubt, amplify the written word. Sometimes the aim of the experiment seems hardly defined enough; as, for instance, in the experiment on the path of a projectile, the student is advised to tabulate certain quantities though it is not made clear for what purpose. We miss diagrams, especially in the optical section; many of the difficulties of the students would disappear if diagrams were insisted upon in practice as well as in theory.

It is a pleasure to recognise the origin of some of Miss Waller's methods of teaching. Those who have had the privilege of submitting at the hands of the late Prof. A. Waller to the psychogalvanic reflex test will be glad to see it included in exercises upon the Wheatstone Bridge. The note on the "Self" method of producing and determining the direction of a current through a galvanometer is, we venture to think, traceable to the same source. We could wish that there were even more of such links with a great physiologist.

THORACOSCOPY.

Atlas Thoracoscopicon. By Dr. FELIX COVA, of the Vittorio Emmanueli III. Sanatorium. Milan: Sperling and Kupfer. 1928. With 50 plates. 37*s*. 6*d*.

Dr. Felix Cova has produced a very fine and comprehensive atlas illustrating the various pathological conditions which may be seen in the pleural cavity by means of the thoracoscope. It is evident that in the Vittorio Emmanueli III. Sanatorium of the City of Milan, the thoracoscope is used extensively, with

the result that it has been possible to reproduce most of the typical conditions that are to be found within the pleural membranes (with certain exceptions such as actinomycosis, hydatids, and primary tumours). Following on three anatomical pictures there are 38 plates illustrating the various inflammatory conditions varying from hyperæmia, through the dry and wet pleurisies to purulent effusions and fistulæ; plates of tuberculosis and syphilis, secondary malignant deposits, fracture of a rib, diaphragmatic hernia, subpleural emphysema, and adhesions are included. These are followed by nine illustrations depicting Jacobæus's operation. The coloured illustrations give a faithful picture which shows clearly the characteristics of the individual lesions. The descriptions, and the author's preface and that by Jacobæus are in three languages. Whilst the German translation of the original Italian text is excellent, the English translation leaves much to be desired.

As the author points out, this is the first atlas of its kind which has been produced, and should be valuable to all who are undertaking thoracoscopy and who are interested in visualising the appearances due to pathological lesions in the pleural cavity. The reproductions are so clear that, given experience in the technique, the recognition of the various lesions in vivo should be greatly simplified.

THE DIARY OF A MEDICAL STUDENT DURING THE MID-VICTORIAN PERIOD, 1860–1864.

By SHEPHARD T. TAYLOR, M.B. Norwich: Jarrold and Sons, Limited. 1928. Pp. 201. 3s. 6d.

Mr. Shephard Taylor, the son of a Norfolk squire, had a successful student's career, especially distinguishing himself in botany. He was for many years on the staff of the Norfolk and Norwich Hospital and is now approaching the age of 90. His diary is that of a close and shrewd observer of matters both medical and otherwise. It affords a valuable retrospect of manners, modes, and men in medicine and surgery in the immediate pre-Listerian period, together with an amusing and critical survey of London viewed through the eyes of a provincial medical student in mid-Victorian times. His discursive and chatty diary is thoroughly interesting, dealing with the serious, the intimate, and the petty with equal humour and discrimination. The diary was kept when the author was a medical student at King's College Hospital during the years 1860–64, and is more or less a record of his own career as a student, with pithy and apt comments on medical and surgical happenings—examinations, operations, and the clinical features of medical and surgical cases. These notes are interspersed with lighter matter, outside medical interest, but maintaining the personal note. There were important men at King's College Hospital in the early 'sixties, among the staff being the professors of surgery, Sir William Fergusson and Sir William Bowman, the professor of physiology, Lionel S. Beale, the professor of medicine, Sir George Johnson, and the professor of materia medica, Sir Alfred Baring Garrod. The medical student, who is open eyed, is often a sound critic of his teachers, and when not prejudiced his opinions are sometimes worth while if they were made in statu pupillari, and are not the outcome of his later reflections, and Dr. Taylor's were made on the spot. He admired greatly Sir Alfred Garrod, but condemned the then almost routine treatment of typhus fever, at the time very rife in the neighbourhood of King's College Hospital, with large doses of alcohol; this treatment Garrod followed and in the opinion of young Taylor it was responsible for the mortality-rate which prevailed. The student-critic had the courage of his views, for he wrote a paper condemning the use of alcohol in typhus fever which was ranked "A 1" by Dr. John Harley for the King's College Medical Society's Prize.

Among public events noted by the diarist, he witnessed, in the intervals of a midwifery case in a street off the Strand, the public entrance of the late Queen Alexandra into London; he saw the great Tooley-street fire, and several public executions, including the hanging of five Malay pirates at the Old Bailey on Feb. 21st, 1864. Dr. Taylor has done well to publish the commentaries of his youth; such documents make for a real comprehension of medical history, scientific and social.

JOURNALS.

LE SANG, Vol. I.—This journal [1] has now completed the first year of its life, and the six numbers so far published have fully justified its existence. Much useful material has been collected in the first volume. The subject of the blood groups, which for some reason has hitherto failed to attract much attention in France, is competently dealt with by M. Lamy and A. Mendes Correa, the former reviewing the general situation in regard to the groups and the latter the anthropological implications as they now stand; given this ample exposition of the subject in their own language it may be hoped that French workers will now turn their serious attention to the numerous relevant problems still to be solved. Among other valuable papers J. Jolly reports the results of investigations on the action of radiant energy upon the lymphoid system, and J. Barcroft describes the results of his work on the relationship of the mass of the spleen to the volume of circulating blood; this has already been reported in our own columns. A biography of that doyen of hæmatology, Prof. Georges Hayem, constitutes an interesting and very welcome feature of the first number. On the Comité Etranger it is pleasing to observe the names of "J. Barcroft (Cambridge)" and "Sir Wright (Londres)."

JOURNAL OF INDUSTRIAL HYGIENE.—February: An excellent article is contributed by S. Meyer from Dusseldorf, based on a long series of examinations of blood from workers exposed in factories to such toxic substances as benzol, toluol, xylol, naphthalene, aromatic nitro-compounds, arsine, thallium, and hydrocyanic acid. The material was obtained by Dr. Teleky in the course of his work as medical inspector of factories. Regardless of which poison was acting, invariably the lymphocytes showed an increase, and the neutrophils a decrease. A similar reaction is said to occur in diseases of the endocrine-sympathetic nervous system. The author, therefore, suggests the chemical poisons named act upon the endocrine glands and disturb their functions, and sees here an explanation of why aplastic anæmia is originated by such poisons. A further article is the fifth in a series dealing with metal fume fever, and describes the results of exposing rabbits, rats, and cats to the inhalation of zinc and magnesium oxide fumes. The authors, K. R. Drinker and P. Drinker, induce deep breathing by adding 10 per cent. CO_2 to the fume-laden atmospheres. There is a full account of the experimental work. Falls in body temperature occurred, varying with the duration of exposure, in contrast to the rises which occur in man. Zinc oxide fumes caused a heavy outpouring of polymorphonuclear leucocytes, indicative of an irritative process which may go on to broncho-pneumonia. Zinc, which is not in itself toxic, appears to be excreted by the kidneys and liver; the pancreas also may be concerned.

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[1] Published by G. Doin et Cie, Paris, at Fr.100 in France or Fr.115 abroad.

KING GEORGE'S HOSPITAL, BECONTREE.—Under this name a new voluntary general hospital of between 300 and 400 beds is to be created on the new Becontree Estate of the London County Council in Essex. The scheme has been approved by King Edward's Fund which, by reason of the recent extension of its radius, now includes this district. The existing buildings of the Ilford Emergency Hospital (42 beds) will be used as the nucleus of the new buildings which will be erected in contiguity to it. A board of management constituted from each of the districts served will administer the institution, to which the King and Queen have promised to contribute.

THE LANCET.

LONDON: SATURDAY, MARCH 10, 1928.

INDUSTRIAL RHEUMATISM.

THAT a scheme is on foot for the establishment in London of a clinic for the employment of physical methods of treatment with special reference to rheumatic conditions is known to the medical profession and the public. This proposal of the British Red Cross Society to found a centre accessible for certain classes of sufferers from industrial rheumatism is the first expression of a movement which has already well-known continental examples, and we are glad to learn that substantial pecuniary support has been received already. Of the sum of £40,000 which was considered to be necessary to meet the cost of founding the first clinic over one-third had been received some weeks ago, and when the figures are published it will be appreciated that an immediate start can be made in what should be a most valuable public effort. At the meeting last week of the Council of Industrial Medicine, in connexion with the Federation of Medical and Allied Services, workers of experience in that particular regard pointed out the directions in which industrial rheumatism would be amenable to organised treatment, while Dr. M. B. RAY dwelt in more detail upon the aims of the British Red Cross Society. They were voicing views held by all who have any knowledge of the misery and inefficiency which result for a large section of our population from the varied group of symptoms termed, collectively, industrial rheumatism.

The scheme of the British Red Cross Society has matured in the decision to start a clinic for the treatment of rheumatism in adult sufferers, especially industrial workers, in an accessible place in London, and an option has been secured on a suitable building in Marylebone. The first funds collected will be used for the adaptation and equipment of the premises, and the future of the project can hardly be in doubt seeing the powerful endorsement which it received in the *Times* at the beginning of this year in a letter signed by Sir ARTHUR STANLEY, chairman of the Red Cross Joint Committee, and a group of distinguished men, physicians and physiologists, officials and public workers. Further, the scheme has the support of the representatives of industrial and friendly societies and of many other health organisations, whose managers are all alive to the serious inroads made by rheumatism upon the well-being and wage-earning capacity of their constituencies. Compared with the urgency of the evil the sum of money required to start a practical organisation for its relief is small, and the proportion of that sum already promised in donations makes it seem likely on every count that the total which has been asked for publicly will be forthcoming promptly. And as the first step in their large policy proves successful, we may be sure that the British Red Cross, and those associated with them in the scheme, will be pressed to pursue their activities, for the extent of the need will be more widely recognised. A memorandum from a subcommittee of the British Committee on Rheumatism, itself a committee of the International Society of Medical Hydrology, has been issued giving a summary of what is necessary in a clinic intended primarily for the benefit of insured rheumatic persons, who constitute such a heavy burden upon medical service. More than 370,000 individuals under the National Health Insurance Act alone seek relief annually from their panel for rheumatic diseases, and as London has an insured population of nearly 2½ millions the number of rheumatic persons requiring treatment in the metropolis is huge. It is easy to see that those who are now putting out a working plan for treatment have to think largely, and must also define clearly their initial design. For the purpose of the clinic which it is now proposed to start such varieties of rheumatism as rheumatic fever, acute rheumatoid arthritis, and acute inflammation of fibrous tissues are not under consideration, for it is an ambulatorium rather than a hospital which is in contemplation. The patients who are suitable for treatment must be able to walk, or at any rate be in a condition which enables them to be brought to the centre, where the subacute forms of rheumatism, arthritic joints, lumbago, sciatica, and fibrositis will be treated, as well as the mechanical impediments which follow acute or subacute attacks, and all disabilities due to accident or injury which have assumed a rheumatic form. It will be the special object of the first centre, which is situated near Great Portland-street railway station, alike to prevent the development of these mechanical disabilities and to relieve the results of the exudations and adhesions which damage so sadly the working capacity of their victims. For this purpose the clinic will have at its disposal all the necessary equipment for the application of heat and cold, in water or vapour, for all methods of manipulation, and for the prescribing of exercises, alone or in combination with other methods. The clinic will be able to apply radiation, as heat, light, and invisible rays, and electricity in constant, interrupted, or high-frequency currents; and these physical methods will be accompanied, where necessary, with the indicated forms of medical and surgical treatment. Speaking generally, the patient will have at each visit two or more of the methods applied in succession, and this combined treatment will be continued in accordance with the progress made; and while experience suggests that slight cases may require brief treatment the value of periodical physical treatment is recognised—indeed, it can be demonstrated from the records in the possession of many medical men familiar with spa therapeutics.

We are behindhand in this country in our realisation of the toll which is paid through a large class of afflicted workers, and also in our unfamiliarity with the value of the systematic treatment of many rheumatic conditions. Over a year ago Dr. RAY, writing in our columns[1] as honorary secretary of the British Committee on Rheumatism, described the existing situation in many continental States, and demonstrated how much we lack both in care and prevision. But lately there have been signs of the intention to do better, and we welcome the fact that a conference will be held in May next at Bath under the presidency of Sir GEORGE NEWMAN, at which rheumatic diseases will be considered under their social and medical aspects by leading scientific authorities. Such a conference will prove the need for clinics like that which is now about to be started in London. We have experience of good results from systematic treatment at our spas, where scientific hydrology combined with physical procedure is systematically employed, and the place of British spas will be made clearer by the relegation of cases from the new clinic to certain centres for apt treatment. Further, while the medical profession and, through them, the public can be familiarised

[1] THE LANCET, 1926, ii., 935.

with the scientific use and conditions of physical methods, material will be available for the investigation of the influence of occupations upon the population, and facilities will be furnished for the concurrent investigation of incipient subacute and chronic diseases. We have some distance to make up, but the signs of an earnest start are promising.

ABSCESS OF THE BRAIN.

CEREBRAL abscess must always be regarded as imminently dangerous to life, for it is almost invariably fatal if untreated. Yet there is no disease of the brain which can be approached with greater confidence of success, and as long ago as 1893 MACEWEN was able to report 25 cases, in 19 of which operation was performed, with 18 recoveries. The reasons for a hopeful outlook are not far to seek. Though occasionally due to infection through a compound fracture of the skull, or to transmission of bacteria from infective foci in the lungs or pleural cavities, cerebral abscesses are generally caused by infection spreading from the frontal sinus or middle ear. In those of otogenic origin, which far outnumber all the other varieties, extension of disease to the brain is usually heralded by symptoms referable to the ear. The infection passes in certain clearly defined directions and the abscess is to be found in the white matter of the adjacent temporal lobe or cerebellum. It tends to become "encapsulated" and its ill-effects are produced not by destruction of the vital parts of the brain, but by a local and general rise of intracranial pressure. These facts mean that to discover its presence and situation should be relatively easy compared, let us say, with the diagnosis of intracranial tumours. But in actual practice the warning signs may be slight and the rapid rise of intracranial pressure, so characteristic of abscess formation, may speedily induce a drowsiness which interferes with examination of the patient and thus militates against accurate localisation. It is for this reason that complete neurological investigation is urgently required in all cases of chronic otitis media in which headache makes its appearance, and in all cases of acute mastoiditis in which the temperature fails to settle after operation. The localising signs that should be sought for have been admirably described by Dr. C. P. SYMONDS [1] in a recent address to otologists. For cerebellar abscess, which is usually situated in one lateral lobe, Dr. SYMONDS regards incoördination of the upper limb on the corresponding side, and nystagmus, or lack of conjugate movement of the eyes towards the side of the lesion, as the most valuable diagnostic signs. For temporal abscess weakness of the face, signs of involvement of the pyramidal tract, and defects of the visual fields, on the side opposite to the lesion are of cardinal importance. When the abscess is in the left temporal lobe (in a right-handed person) an additional sign of great value is dysphasia, often limited to a difficulty in naming objects and not necessarily apparent in the patient's ordinary conversation.

In the Hunterian lecture which we publish on another page Mr. MILES ATKINSON lays stress on the importance of certain early general signs of intracranial suppuration. He considers that in cases of otitis media the onset of cerebral abscess is characterised by "an initial feeling of chilliness, possibly even a rigor, headache, some rise of temperature, and nausea or vomiting," and he urges that diagnosis should, if possible, be made from the detection of these changes before the onset of the localising signs described above. Mr. ATKINSON does well to call attention in this way to the early stage of abscess formation and he is probably correct in believing that the mastoid process should be explored, or reopened, at this stage; for the spread of infection to the brain can be limited, and development of cerebral abscess can often be prevented, by timely and adequate drainage of mastoid and extradural abscesses. It is doubtful, however, whether he is wise in recommending exploration of the brain before the appearance of the localising signs, as patients who show symptoms such as he describes recover sometimes without any surgical interference with the brain itself. Success in treatment depends on an understanding of intracranial pathology. The rise of pressure occasioned by the formation of a cerebral abscess is both sudden and progressive, and the brain has little opportunity of adapting itself to the new conditions prevailing within its rigid covering. The degree to which tension is raised is shown by the remarkably rapid onset of papilloedema, severe headache, drowsiness, and other signs of acute hydrocephalus, and by the appearances seen at operation. When an abscess is opened its walls are rapidly obliterated by the pressure of the surrounding brain, and it is notorious that an abscess which has been partially emptied is extremely hard to find again, either at operation or by subsequent passage of the exploring needle. Failure to empty the abscess completely allows pus to be trapped in the depths of its cavity so that recurrence may follow after a period of temporary improvement. No time is so favourable for drainage of an abscess as the moment when the pus is first discovered, and for these reasons it is inadvisable to treat the condition through a small opening in the skull, or by such measures as repeated aspiration and the insertion of small drainage-tubes which do not reach to the bottom of the abscess cavity. It seems more rational to make a wide opening in the skull and dura, the situation of the abscess having previously been mapped out by passage of a brain needle down to—but not through—the resistant wall of the abscess. When the abscess is opened a large drainage-tube should at once be passed down into the depths of the cavity, where it is left to be extruded by the brain during the development of the fungus cerebri that usually follows. The formation of fungus cerebri is to be desired, since it displaces the remains of the abscess cavity to the outside of the skull and thus allows rapid restoration of normal pressure within. It soon heals and subsequently gives no trouble.

Thirty-five years have passed since MACEWEN published his remarkably good results, and it is to be regretted that Mr. ATKINSON does not give us the results of more modern workers. In spite of advances in neurological diagnosis and surgical treatment, it would not be surprising to learn that no one has been able to improve on MACEWEN'S successes. Modern specialism has not been favourable to the treatment of cerebral abscess, inasmuch as it has produced three artificially restricted fields of endeavour—aural surgery, neurology, and neurological surgery—each of which tends to monopolise some branch of practice that is essential to successful management of the disease. Such specialisation inevitably leads to divided responsibility for the treatment of a condition which is pre-eminently one of emergency, demanding the control of a single individual who is thoroughly familiar with all its aspects.

[1] Symonds, C. P.: Some Points in the Diagnosis and Localisation of Cerebral Abscess, Proc. Roy. Soc. Med., 1927, xx. (Section of Otology), p. 41.

HEAT IN THE RELIEF OF PAIN.

THE medical profession owes an increasing debt of gratitude to the chemists and biochemists of the great manufacturing houses for their labours in making available so many lines of treatment in the handy form of tablet or ampoule. There is a danger, however, that this "treatment made easy" may lead us to forget the use of, and method of using, some of the older therapeutic measures which have stood the test of time. Blood-letting, cupping, and the rest were powerful weapons in the careful hands of the older physicians, and Dr. JOHN HARVEY KELLOGG has done a service by drawing attention in the *American Journal of Surgery* for December last to the value of heat for the relief of pain. He traces the therapeutic use of heat in this connexion from the lower animals, through children and the primitive people of all countries, to the present day. The exact mode of action is not fully understood. Heat may relieve local congestion by producing a collateral hyperæmia, it may break down a vascular stasis, and it is suggested that it causes an inhibition of the sensory nerves and so relieves pain by acting through the thermal nerves of the skin. This power of relieving pain seems to be a specific property of heat, common to heat waves of all lengths but most marked in the short infra-red rays, possibly on account of their greater penetrative power. To obtain the best results the heat must be intensive, or as "hot as the patient can bear," and to apply it, careful and continuous attention is required either from doctor or nurse. It is not just a prick with a hypodermic needle and away. Heat can be applied by compress, poultice, hot-water bag, hot stones, heated air or electricity in various forms, and may be given either dry or moist. The intensity of dose may be greatly strengthened by combining some method of cooling the skin surface, such as evaporation or the intermittent use of cool air. Treatment of this nature, like every form of therapy, requires a knowledge of when and how it should be employed, and it ought not to be left to a nurse or an attendant as being below the personal attention of the physician. Unfortunately this is often done because the physician is not skilled in the niceties of its use. Sir LAUDER BRUNTON, in his "Action of Medicines," published over 30 years ago, gave minute directions as to the proper making of a poultice and advised his readers to connect in their minds "the two p's: pain and poultice." Does poultice-making still find a place in the modern medical curriculum? It is doubtful. The apprentice system had much to commend it, and one of its virtues consisted in the handing down from generation to generation of a number of practical points in what might be called minor medicine and surgery, the knowledge of which made the distinction between the master and the apprentice. No one who has seen the relief which follows a good poultice in a case of abdominal colic, or who has obtained for his pneumonia patient a couple of hours' sleep with a well-timed mustard paste, will ever doubt the value of heat therapy. Besides, it reduces the drug bill and lessens that chance accident which every true physician dreads—the formation of a drug habit.

A MEDICAL CRUISE.—Every year the *Bruxelles Médical* organises a cruise for doctors, their families, and their friends. This year it will start at Bordeaux on July 29th and end at Marseilles on August 18th, the places to be visited including Vigo, Funchal, Santa Cruz de Teneriffe, Las Palmas, Casablanca, and Ajaccio. Information may be had from the Section de Voyages de *Bruxelles Médical*, 29, Boulevard Adolphe Max, Brussels.

Annotations.

"Ne quid nimis."

WELFARE OF THE BLIND.

THE yearly reports of the Advisory Committee on the Welfare of the Blind show a steady improvement in their condition since the passing of the Blind Persons Act of 1920, and the latest [1] of them states that 14,563 blind persons between the ages of 50 and 70 are in receipt of Government pensions—i.e., 84 per cent. of those within the eligible age. Schemes for promoting the welfare of the blind have been submitted by all the 146 local authorities concerned, and having been approved by the Minister of Health are now in operation. In all but 30 cases the arrangements made are working quite satisfactorily, the difficulties in the minority of cases being due partly to the want of an efficient voluntary organisation and partly to the difficulties of administration in rural areas with a widely scattered population. The expenditure incurred by local authorities in this connexion and the grants in aid from the Ministry of Health have both been steadily growing, the amounts under these headings for the financial year 1926–27 under the former head being £173,828 and under the latter £112,510. The bulk of this money was spent on workshops, home-workers, home-teaching, and books. The statistics given show that the Blind Persons Act has led to the discovery of a large number of blind who were hitherto unknown. Apparently the granting of free wireless licences to the blind in 1926 has led to the discovery of a considerable number who were unregistered. Another thing that comes out is a slight decrease in the number of the blind under the age of 21 in spite of a considerable increase in the later decades, a decrease which presumably indicates some degree of success in the measures in operation for the prevention of infantile blindness. Apropos of these statistics it is difficult to accept the figure 0·5 per cent. which purports to represent the total blindness existing under the age of 5 years, compared with what exists at all later ages. This figure appears to be quite inconsistent with the figures in another table showing the percentage of the total of blind persons who became blind at various ages. It is true that between 1919 and 1927 the percentage of those who became blind under the age of one year compared to the total number diminished somewhat, but in the latter year it was still 17·4. We made a similar criticism of the figures of the sixth report published in 1926 [2] and suggested as an explanation that a considerable proportion of children under school age escape registration. It must be a very large proportion. Other figures show that although the total number of blind persons employed in remunerative work has increased between 1919 and 1927, the percentage in relation to the total number of the blind had decreased from 24·6 to 19·6. This is accounted for by the large number of blind persons over 50 added to the register. One of the favourite occupations is piano-tuning. "It would appear," says the report, "that the general remunerativeness of this occupation has attracted a number of persons who are not really suitable or competent, and in the interests of the qualified tuner we think it desirable that in future only those persons with the highest technical and personal qualifications should be encouraged to take up this occupation." We are glad to observe that an important section of the report is devoted to the difficult problem of partially blind children. The partially blind are outside the scope of the benefits conferred by the Blind Persons Act. It is estimated that there are some 7000 partially blind children in England and Wales, and at present there appears to be accommodation for only 1500 of them in special schools for myopes and the partially blind. Meantime there is considerable pressure put on the managers of blind schools to admit these children, for whom the

[1] H.M. Stationery Office. 1928. Pp. 33. 6*d*.
[2] THE LANCET, 1926, ii., 760.

regimen is not altogether suitable. The report rightly deplores the fact that so little has as yet been done to equip persons of this class for taking their place in the industrial life of the country. The suggestion is made that there is ample scope for voluntary enterprise to take up and develop what is really a new social service.

COLLOID CANCER OF THE STOMACH.

IN a thesis submitted to the Graduate School of Minnesota Dr. J. W. Stinson,[1] of the Mayo Foundation, states that the first statistical studies of gastric carcinoma were published in the *British and Foreign Medical Review* of 1857 by Brinton, who in a series of 135 cases found that 9·4 per cent. were of the colloid type. In a series of 2516 pathologically proved cases of carcinoma of the stomach examined at the Mayo Clinic from March 1st, 1913, to May 1st, 1925, colloid changes were found in 121, or about 5 per cent. Twenty-five were in women and 96 in men; the average age of the women was 50·5 years, and of the men 53·3 years, the general age being 52·7 years. The oldest patient was aged 79 and the youngest 31. As regards the symptoms, Dr. Stinson says that there was nothing to differentiate colloid carcinomata from other types of gastric cancer. The only certain method of distinction consisted in exploratory operation and microscopical examination of the tissue. The structure of colloid carcinoma is similar to that of ordinary adenocarcinoma of the stomach except that a large amount of mucus is present. In typical cases the whole wall of the stomach is almost completely changed by the presence of colloid material, so that the cut surface is clear and gelatinous and of a soft consistency. Colloid changes may be noted in the earliest stages of the carcinomatous process and are frequently found on microscopical examination when they are not visible to the naked eye, especially in cases with small ulceration in which the diagnosis lies between benign ulcer and carcinoma. In the present series 97 cases, or 80 per cent., were operable, and the growth was removed; 19 were inoperable and 5 were suitable for palliative measures. The percentage of cases still alive three and five years after operation is about the same as in the non-colloid types of carcinoma, but the incidence of late recurrence is greater in the colloid variety. The post-operative mortality-rate is about the same as in the non-colloid types, the post-operative life expectancy being less in young patients.

THE RED CROSS BLOOD TRANSFUSION SERVICE.

ONE day in 1921 the Camberwell division of the London Branch of the British Red Cross Society was asked for a blood donor for an emergency case. Four members immediately volunteered, and the secretary of the division, seeing that the work was eminently suitable for the Society, instituted a roster. One of those who responded to the appeal was a Rover Scout, who induced his colleagues to adopt blood transfusion as one of their forms of service. In 1925 the Red Cross headquarters took over the organisation, and appointed a committee consisting of representatives from the Society, the Rovers, and the Hospitals Association. In 1926 no fewer than 737 applications for donors were received, and on three occasions only had the request to be refused. The report of the Blood Transfusion Service for 1926 contains a very interesting account of its working. The office is open day and night; in fact, 198 of the calls during the year were urgent. Most donors are called up by telephone at their place of business, and for this reason 6 P.M. is the best time to make the appeal, as it obviates special leave. Until the post offices close, express messages are sent, and after that summonses are transmitted through hostels and private persons with telephone facilities. There is great need for more volunteers for this part of the work. Like most altruistic services, this one suffers much from popular ignorance. The belief that transfusion is dangerous and harmful to the donor is almost universal, and only many years of public education will eradicate it. The truth is, as medical men well know, that the operation is never dangerous and is often beneficial to the donor. The rules of the Society protect donors from being operated on by students and from any but the needle method of extraction. The lay press is generally very helpful in appealing for volunteers, but occasionally prints indiscreet paragraphs about "heroism," which lead to apprehension and a number of withdrawals. Further economies in the service could be effected by hospitals if they would take more care to eliminate the possibility of obtaining a relative before calling up the service, and would avoid as far as possible calling on universal donors (Group 4). The scheme has been financially self-supporting from the start. Two hospitals subscribe 10 guineas each a year, but the bulk of the revenue is derived from donations from private patients and the sale of tinfoil, £60 worth of which was collected in 1926. Although there is still urgent need for volunteers, the London service is well set upon its feet, but the provinces are not so well supplied, since, apart from a few local services, there is no regular organisation at work. One great difficulty is the lack of facilities for grouping patients and donors, and even of surgeons competent to carry out transfusion without pain and inconvenience to the donor. No volunteer, however altruistic, will submit to a series of incisions which he knows are unnecessary. That a service of such value should be wasted on this account is a reproach which we hope the provincial hospital staffs will do their utmost to remove.

STANDARDISATION OF REMEDIES.

THE second annual report of the laboratories of the Pharmaceutical Society of Great Britain show a steady continuance and expansion of the invaluable work they perform for the public health. The two main purposes of this work are pharmacological research, especially into methods of assay, and the biological testing of manufacturers' products. Two events particularly marked 1927. At the beginning of March the new department for vitamin tests began to receive samples, and at the beginning of August the laboratory began to take its part in the administration of the new Therapeutic Substances Act, a duty which meant a great increase in the number of samples of pituitary extract submitted for examination. Alongside this work research has been carried out at Queen Charlotte's Hospital to relate the new system of dosage of this extract to clinical requirements. The Act enjoins that manufacturers shall state the strength of their preparation in units, but leaves them free to sell as many units as they like in each ampoule. The majority, following the United States Pharmacopœia, put up 10 units in 1 c.cm. The preliminary observations of the laboratory staff show that 10 units is a wasteful and occasionally dangerous dose, and that 5 units in 1 c.cm. is sufficient for general purposes. A suggestion that is to be further tested is that manufacturers should prepare doses of 2 units only, a quantity which appears to be safe at any stage of labour where there is no mechanical obstruction. In addition to this work, the staff have been examining the action on the parturient uterus of the various constituents of ergot, and have come to the conclusion that, as the action of histamine is powerful but evanescent, and as tyramine is inert, the value of ergot lies in its specific alkaloid ergotamine or ergotoxin alone. The report goes on to say that, since the water extract of the British Pharmacopœia contains none of this alkaloid, not one ounce of the thousands of gallons made since 1914 can have had any medicinal value.[1] An assay by the Broom and Clark method of several samples of ergot prepared

[1] Surgery, Gynecology, and Obstetrics, February, 1928.

[1] These investigations of uterine stimulants have been discussed in a leading article in THE LANCET (1927, ii., 560).

according to the U.S. Pharmacopœia showed that, whereas Spanish and Portuguese ergot yielded a fair proportion of active samples, 26 out of 27 samples of Russian or Polish ergot had no appreciable activity. This result has been confirmed by the U.S. Department of Agriculture. An investigation into the best method of preparing liquid extract of ergot showed that only the extracts of the U.S. and Dutch pharmacopœias retained specific activity. Among other assay work a standard has been fixed for squill, and results from the cat method of examining digitalis tinctures have been compared with the results obtained on patients; the comparison is nearly complete and is unexpectedly promising. In testing digitalis samples the Society ceased last year to follow the recommendation of the Geneva Conference, which urged that certificates should only be given for samples which did not differ from the international standard by more than 25 per cent. In view of the large number of samples which exceed the upper limit of potency, and the possibility that the next conference may revise this recommendation, a certificate is given for strong samples in an altered form, stating by how much the international standard is exceeded.

The other activities of the laboratory have a large range. Work on the œstrus-producing hormone has confirmed the principles of determination laid down recently by Trevan. Research into the metabolism of rats on a fat diet, especially into ketonuria, shows that the excretion of acetone bodies may be ten times in summer what it is in winter; that it can be inhibited by the injection of pituitary extract or adrenalin, and strikingly increased by insulin. The experimenters conclude that the amount of carbohydrate in the diet has only an indirect influence on ketonuria. The vitamin-testing department is now in full swing. Rats have been obtained from several first-class sources, and an attempt is being made to establish a stock colony of Wistar rats (a highly inbred strain) and feed them on a diet of known composition. An effort with Steenbock's diet broke down in the third generation, probably owing to a deficiency of accessory factors in the particular maize and lucerne used, and Sherman's has failed for the same reason. Nevertheless, success is essential if a serious advance is to be made in vitamin estimation. Ordinary rats may vary enormously in their requirements; six Wistar rats will give a degree of accuracy attainable only with 60 casually chosen animals. To obtain accurate results and keep the numbers within reasonable bounds it is necessary to secure the greatest uniformity. The tests for vitamin D are now fairly certain, and McCollum's "line" test has been verified by X ray photographs, but as yet no standard exists for vitamin A. Höjer's method of estimating vitamin C is being investigated. So far 43 samples have been tested for manufacturing firms by this department, which promises to maintain the high traditions of the Society.

THE PHYSICAL BASIS OF CONDUCT.

"I hope you have recovered from the snappishness from which you were suffering when I last saw you" was, we are told, a common morning greeting among the Erewhonians, and "if the person saluted is still snappish he says so at once and is condoled with accordingly." When Samuel Butler's book was first published in 1872 it was regarded as a piece of amusing satire, far removed from rational procedure. It seems not unlikely, however, that another 50 years will see us taking a very similar attitude to that of Mr. Nosnibor in these matters. Such at least was the conclusion to be drawn from Sir Farquhar Buzzard's discourse to the Royal Institution on March 2nd. He brought forward evidence, supplied by anatomist, physiologist, and pathologist, to show that every change in behaviour has its corresponding change in the central nervous system. Fatigue, heat, or a circulating toxin will so act on the nervous element that its granules are broken down, its shape altered, and its nucleus displaced. Already we are tolerant of the peevishness of convalescence, realising that it is the result of a direct physical cause for which the patient should not be held culpable. We know that the small boy, described by the lecturer, who displays for a week or so after an attack of influenza the primitive emotional reactions proper to a much younger child, will in a short time regain the inhibitions he had recently acquired and become once more the well-mannered person we have produced by careful tuition. Much bitter experience has taught us that punishment, care, and education avail nothing for the victim of encephalitis lethargica, who is, as Sir Farquhar Buzzard put it, hopelessly lacking in moral responsibility because the germ has made havoc among those cells and fibres which should exercise inhibition over childish behaviour. The physiologist, again, has shown that bad language belongs really to the group of "release phenomena" and probably means no more in the bargee or the overworked business man than in the patient going under an anæsthetic or the experimenter shut up in a chamber from which oxygen is being withdrawn. Nevertheless the teaching that sickness is crime and crime is disease has hardly begun to penetrate the public mind, and it is in paving the way for a very necessary change of public opinion that lectures like the discourse at the Royal Institution are so useful. When the intelligent layman realises that changes in behaviour are associated with alteration in structure he will be approaching the disorders of body and mind in a rational and enlightened manner, and he will see the law in its proper light, as an instrument for the public convenience rather than a mechanism for distributing abstract justice.

TREATMENT OF STREPTOCOCCAL INFECTIONS WITH ARSENICAL COMPOUNDS.

It will be remembered by those familiar with the literature that after Ehrlich introduced salvarsan for the treatment of spirochætal and protozoal infections the drug was used by a great many uncritical observers for the treatment of all types of infection, in much the same way as insulin has been used for conditions other than diabetes. After a time these empirical experiments were dropped and the drugs of the salvarsan series are now employed for the treatment of protozoal infections alone. The question of their use for other purposes is once more raised by Dr. Leonard Colebrook's report [1] to the Medical Research Council, which describes an attempt to ascertain their effect on streptococcal infections. The work has been undertaken in a very thorough and careful manner with adequate controls, and the conclusion is reached that a small group of trivalent arsenicals differ very decidedly from almost any other known compound hitherto used in bacterial infections. It is clearly demonstrated that the toxic effect of these substances on the human leucocytes is much less than on certain microbes, such as the hæmolytic streptococci, so that it becomes possible, by suitable adjustment of the doses, to avoid a harmful effect on the leucocytes, while at the same time the drug has an antiseptic action in the blood stream. Dr. Colebrook says that, "broadly speaking, the destructive affinity of these drugs for hæmolytic streptococci is greater than for human leucocytes—that is to say, stronger solutions are required to produce leucotoxic effects than are necessary to kill streptococci." It would appear, therefore, that good results may be expected from this form of treatment. The compounds so far tested may, it is stated, be placed in the following order of increasing toxicity for human leucocytes: metarsenobillon, kharsulphan, and sulfarsenol, approximately equal; stabilarsan; salvarsan; neosalvarsan; and lastly, silver salvarsan. Unfortunately it is found that the leucocytes of patients suffering from streptococcal infections are much more sensitive to the action of these arsenical

[1] A Study of Some Organic Arsenical Compounds with a View to their Use in Certain Streptococcal Infections. By Leonard Colebrook, M.B., B.S. Lond. Bacteriological Department, Medical Research Council. Special Report Series No. 119.

compounds than are the leucocytes of normal people. The problem which Dr. Colebrook has been studying is particularly well suited to the technique evolved in the laboratories of Sir Almroth Wright, but as the result is somewhat tentative, it is difficult to assess the clinical value of the work so far accomplished.

MEMORIAL FUND TO SIR DAWSON WILLIAMS.

IT was naturally decided, and very rightly, that the movement for a testimonial to Sir Dawson Williams, which was started the week before his death, should continue, and that the resulting fund should be employed in the institution of a memorial to him, connected in some intimate and fit manner with the advancement of medicine. The fund will remain open for a time in order that answers to the appeal may be awaited from medical men resident abroad. All who wish to be included in the lists, the first one of which will be published shortly, are requested to send their contributions at once to Sir StClair Thomson, 64, Wimpole-street, London, W., to whom cheques should be made payable, while the envelope should be marked "Dawson Williams Testimonial."

MEDICAL EDUCATION.

IT is often said that academic teachers have too much say in medical education and practising doctors too little. The reply that medical education is an educational and not a professional problem and should therefore be dealt with by educational rather than professional experts is probably not altogether sound in medicine or in the other technological subjects of university training. However that may be, the Commission on Medical Education, which has its headquarters in New Haven, U.S.A., gives in its second report a very interesting account of its attempt to obtain the views of medical men in ordinary practice on the subjects with which the Commission concerns itself. A circular was sent out to a number of doctors named by their local medical societies as successful practitioners and over 1600 replies were received. These were divided into three groups, the first graduating before 1900, the third in 1911 or later. Owing to the rapid changes which have taken place in medical education in America, these three groups had themselves received very different training. Thus only 20 per cent. of the first group had had as much as four years' instruction (i.e., beginning with anatomy and physiology) against 100 per cent. of the third group, 53 per cent. had had no pre-medical university teaching compared with 18 per cent., 61 per cent. had held no house officership against 8 per cent., 70 per cent. were in independent practice when they were 25 years old compared with only 6 per cent. But when the medical men trained in these diverse ways stated their opinions as to what training was desirable, there was remarkable unanimity, whether they had themselves experienced what they recommended or not. Thus over 90 per cent. in all three groups consider pre-medical university work desirable, nearly every one thinks a four-year medical course necessary, and an internship desirable. What was good enough for them is not good enough now. But while these practitioners think well of some of the main changes which have overtaken the curriculum, they are, of course, far from satisfied with the present arrangements. The overcrowding of the course and consequent absence of time for study, undue emphasis on laboratory work, too much attention paid to rare and too little to common diseases are among the most frequent criticisms. At the same time the Commission reports that it is generally appreciated that the acquisition of a proper philosophy of scientific method by the student during his training will largely determine the level of his practice in the future, and there is no serious suggestion that the course should be focused on practical problems alone. Many doctors reported that they had received signal and fruitful inspiration from one teacher or another, and most of those who answered the question about the essential ingredients for success in practice put character and hard work first. The report, with all the details which it gives, deserves careful study because it represents the aims of the average good-class practitioner and not those of the avowed reformers and reactionaries who alone are commonly vocal.

SERUM TESTS FOR SYPHILIS.

THE Meinicke micro-reaction, on which Dr. David Prentice reports in our present issue (p. 493), represents a further stage in the search for some simple and quick modification of the Bordet-Wassermann test for syphilis—a search which has already resulted in the development of the Sachs-Georgi, the sigma, and the Kahn tests. The reaction may be performed either macro- or microscopically; and while Dr. Prentice's paper deals with the latter method a full account of the macro-reaction by Dr. E. A. Rucker and Dr. L. E. H. Whitby may be found in the February number of the *British Journal of Experimental Pathology*. In its barest essentials the technique consists in the admixture of a certain quantity of the serum to be examined with a certain quantity of a special "antigen." Full details of the preparation of this antigen are given by Rucker and Whitby, but those who wish to perform only a limited number of tests will probably find it easier to procure it from Meinicke's laboratory. As the reaction depends upon precipitation, and the complement is not concerned, the serum to be examined requires no preliminary inactivation. The report given in both papers is favourable, and in the hands of these three observers the reaction gave results closely approximating to those of the Wassermann test. Rucker and Whitby point out, however, that they obtained no evidence that the Meinicke reaction is more sensitive than the Wassermann, which makes them regard it as definitely less sensitive than the sigma. For the present there is obviously no question of the Meinicke reaction or any of its precursors replacing the Wassermann reaction in the diagnosis of syphilis, but in its microscopic form, which requires only a few drops of blood withdrawn by puncture of a finger, it has great advantages in pædiatric and asylum practice. The macroscopic technique, furthermore, seems to be an advance on all previous reactions of its kind and certainly marks an important step towards a method which will send the Wassermann reaction into honourable but unregretted retirement.

MEDICAL AND DENTAL REGISTERS.

WE have received from the General Medical Council the three official registers for the year 1927. The Medical Register, among its 102 prefatory pages, includes the amending Act of 1927 giving effect to the mutual registration as between Great Britain and the Irish Free State. In this section the important warning notices have been revised and brought up to date, the warning in regard to association with uncertified women practising as midwives having taken more precise form in view of recent legislation. In the warning notice addressed to dentists has been inserted a paragraph on dangerous drugs, similar to that addressed to the medical practitioner. The only other substantial addition to the prefatory section is a somewhat melancholy table showing the several British possessions and foreign countries with which reciprocity formerly existed and no longer exists. Belgium, of course, renounced this kind of coöperation seven years ago, but the Canadian provinces of New Brunswick, Ontario, and Saskatchewan have thought better of their reciprocity within the past two years, and in the case of Ontario the change has only just come into force. The number of persons on the Medical Register at the beginning of the present year was 53,769, being an increase of 1155 on the previous year. During the year 1927 1941 names were added to the Register, 971 in England, 462 in Scotland, 274 in Ireland, 215 and 19

in the Colonial and Foreign Sections. At the same time 71 names were restored to the Register and 1035 removed, 840 on evidence of death, 2 on ceasing to practise, 191 under Section XIV. of the Medical Act as having failed to reply to the Council's inquiry, and 2 were erased by order of the Council. The Dentists Register, besides containing a convenient record of the various Acts relating to dentistry, sets out in full the regulations of the Dental Board, with an appendix of forms for dental registration. The total number of names on the Dentists Register at the close of the year 1927 was 14,576, being an increase of 181 on the previous year. The number of names added by registration during the year was 400 in the British list and one in the Colonial list. Of these, 363 registered with qualifications and 38 under the Dentists Act, 1921. At the same time 355 names were restored to the Register and 575 removed, 135 on evidence of death, 2 on ceasing to practise, 429 for non-payment of registration fees, 7 on failing to reply to the Board's inquiry, and 2 names were erased by order of the Medical Council. The Dentists Register contains a classified local list of dental practitioners which has special value owing to the disappearance of the names of dental surgeons from Churchill's Medical Directory and the discontinuance of the Dental Surgeons' Directory. The Medical and Dental Students' Register shows that 1214 medical students and 244 dental students registered during the year. In the case of medical students the number has apparently settled down to a level adequate to supply the annual loss from death or retirement; an entry of under 250 will certainly not suffice to maintain the level of dental practitioners at its present figure. All three Registers are published for the General Medical Council by Messrs. Constable and Co., 10, Orange-street, London, W.C. 2, the prices being 21*s.*, 12*s.*, and 7*s.* 6*d.* respectively. It may be noted that copies for previous years are available at the greatly reduced figures of 5*s.*, 1*s.*, and 2*s.* respectively.

THE HEATING OF BUILDINGS.

LIKE their ventilation, the heating of buildings is apt to be haphazard. Of the several methods employed, the most popular is, of course, radiation from coal fires, gas fires, or electric radiators, and this method has many supporters who claim that it is pleasant and exhilarating because the rays do not warm the air through which they pass so much as the objects on which they impinge. The opposite form of heating is the introduction of warm air by the plenum system; the process is here reversed, since objects in the room are warmed by heated air instead of the air being warmed by heated objects. Hot-water pipes and steam radiators have much the same effect as hot air, for they chiefly transmit warmth through currents of air heated by contact with them, and only to a minor degree by radiation. Quite recently a new method of radiant heating has been introduced, in which large surfaces or panels, flush with the surface of ceilings, walls or floors, are warmed by concealed coils of hot-water pipes. The intensity of the radiation so obtained is some 1400 times less than that from a fire at about 2000° F., so that panel-heating is hardly in the same category as that from fires. Thus it is somewhat misleading, to say the least, to suggest that the radiant warmth from a ceiling approximates closely to the effect produced by sunshine. On the other hand, the method deserves consideration, if only because coal or gas fires are not suitable or economical for heating large buildings, and a useful report [1] just issued by the Industrial Fatigue Research Board describes an investigation of its application to offices and factories. An account is first given of the Moll thermopile, used for measuring the amount of radiant heat emitted from various surfaces, and details are then supplied of a large number of observations made, and sensations recorded, under varying conditions produced by wall-panel heating, ceiling-panel heating, under-floor heating (studied in the new Liverpool Cathedral), panel heating in factories, and high temperature radiations. The most characteristic feature of panel heating was found to be an even distribution of heat over the room, the air temperature of which might not vary more than 1° to 2° F. at any position or level; with hot-water radiators and plenum systems the air temperature near the ceiling may be 10° to 20° warmer than it is near the floor, thus leaving the inmates' feet too cold and their heads too warm. Generally with panels the walls, ceilings, and floor are about 3° warmer than the air, whilst with hot-water radiators the reverse holds good. Direct panel radiation is said not to have caused any definite subjective effect, such as is experienced when gas or coal is used, and whilst it was found that rooms heated by fires felt comfortably warm when 7° cooler than convection-heated rooms, the permissible reduction of air temperature in panel-heated rooms was less than 1°. Panel heating, without claiming comparison with the sun's rays, is held to have a great future, and it may come to replace hot-water radiators and plenum air installations. In big rooms, however, any system of radiant heating ought to be supplemented by small hot-water radiators before each large window, so that down-drafts of cold air may be counteracted.

[1] A Physiological Study of the Radiant Heating in Various Buildings. By H. M. Vernon, M. D. Vernon, and I. Lorrain-Smith. Report No. 46. Industrial Fatigue Research Board. 1928.

A HUNTERIAN CELEBRATION AT ST. GEORGE'S.

THE Hunterian Society of St. George's Hospital celebrated the 200th anniversary of John Hunter's birth by inviting the Hunterian Society of London to a conversazione on March 1st, when Sir Humphry Rolleston and Sir Crisp English delivered short addresses. This was a time of centenaries, said Sir Humphry. The four most famous names in British medicine were those of William Harvey, Thomas Sydenham, John Hunter, and Joseph Lister, and whilst the centenary of Lister's birth had been celebrated last year, the tercentenary of the publication of Harvey's "De Motu Cordis" would be commemorated in two months' time. It was fitting that Harvey and Hunter, both of them experimental philosophers, should be linked together in grateful recollection. Hunter was the first to describe the circulation in crustaceans and insects, just as Harvey discovered the circulation of the blood in the higher animals; Hunter, like Harvey, studied the earliest stages of life, and was responsible for the dictum that "embryology indicates the steps by which higher forms in a group of animals have been evolved from a lower." The more he was known the more wonderful did he seem, and as the years went by his intellectual stature seemed only to grow grander; anatomy, physiology, pathology, surgery, and biology in its widest sense found in him their master. But though his influence covered so wide a field, it remained specially appropriate that his bicentenary should be celebrated at St. George's Hospital, of which he was the chief glory, and where he first instituted clinical teaching in surgery. Sir Humphry concluded by referring to Hunter's burial in Westminster Abbey and to Gilbert's bronze bust which adorns the entrance to the St. George's out-patient department. Sir Crisp English then gave a graphic sketch of the places with which Hunter was associated, from his home in Scotland, where he worked for a while as a cabinet-maker, to St. George's Hospital, where, as a surgeon, he practised, taught, and died. He was a man without the advantages of education and culture, which accounted for his roughness of manner and perhaps his difficulty in getting on with his colleagues. But the pupils who had written of their master knew more of Hunter than his critics did, and it was impossible for us to-day, looking at his portrait, not to believe that their appreciation was justified. In his spacious house at Earl's Court Hunter had

many sorts of animals devoted, like himself, to science, and Sir Crisp showed drawings of the house and of the boiler in which Hunter prepared his skeletons, including that of the Irish giant now in the Hunterian Museum of the Royal College of Surgeons of England.

During the conversazione there was a display of many interesting specimens and letters.

THE COMPOSITION OF BOROCAINE.

ANNOUNCED some two years ago under the title the Borocaines: a New Class of Local Anæsthetics, these compounds entered the medical world with a certain éclat. Borocaine, or ethocaine borate, was claimed to be less toxic than the corresponding hydrochloride, novocaine, since its alkaloid content was only about two-thirds as great. It was also said to be ten times as effective as novocaine, and more powerful even than cocaine, a claim that clinicians have not been able to support. The real interest in the discovery was that it was something new. A careful investigation[1] of this claim by Dr. G. W. Collins leads him to the conclusion that the borocaine of Copeland and Notton is identical with the novocaine borate prepared by Einhorn and Uhlfelder, described by them in 1910, and used by Gros in 1911. The average medical reader is hardly qualified to weigh evidence in a matter involving the composition of a complex organic ester, and is naturally disposed to attach much weight to the opinion of Sir William Pope as to the true formula of borocaine. But the facts Dr. Collins adduces in support of his thesis, and of the formula, $C_{13}H_{20}O_2N_2.5HBO_2$, which he considers represents the borate synthetised by both groups of workers, are apparently conclusive, and have already met with acceptance in America. The various claims may be summarised thus:—

—	Formula.	Percentage of boric acid (theoretical).	Melting-point (actual) Cent.
Einhorn and Uhlfelder..	$C_{13}H_{20}O_2N_2.4\,B(OH)_3$	50·1	160°
Copeland and Notton ..	$2(C_{13}H_{20}O_2N_2)\,4H_2O,5B_2O_3$	47·2	168°
Watson-Williams (E.)	—	—	166°
Collins.. ..	$C_{13}H_{20}O_2N_2.5\,HBO_3$	48·2	166°

Borocaine is, we believe, protected by patent, but it is a little difficult to discover in its preparation the element of newness essential for such protection. The process of synthesis consists of mixing in solution molecular proportions of the base and the acid, an old-established method. Possibly the use of acetone as a solvent was a novelty, but that hardly seems essential for the production of ethocaine borate.

[1] Jour. Amer. Med. Assoc., Jan. 7th, 1928.

CONGRESS OF THALASSOTHERAPY.—The fifth annual international congress of thalassotherapy will be held at Bucharest and Constanza from May 21st to 29th.

A CONFERENCE ON RHEUMATIC DISEASES.—On May 10th and 11th next a conference on rheumatic diseases will be held at Bath under the presidency of Sir George Newman, Chief Medical Officer to the Ministry of Health. The conference will be divided into three sessions. The first, over which Lord Dawson presides, will deal with the social aspects of the disease; the second, presided over by Sir Humphry Rolleston, will deal with causation; and the third, presided over by Sir Farquhar Buzzard, will discuss treatment. Many leading authorities on rheumatic diseases have promised to contribute papers on various aspects of the subject, which is felt to be one upon which both the medical profession and the public require information and guidance. The hon. medical secretary of the conference is Dr. Vincent Coates, 10, The Circus, Bath, and the hon. organising secretary, Mr. John Hatton, who may be addressed at the Pump Room, Bath.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCLXVI.—TREATMENT OF DIVERTICULITIS OF THE COLON.

OBSERVATIONS of recent years have shown that the occurrence of diverticula of the large intestine ("diverticulosis") is comparatively common, and that these diverticula become inflamed and give rise to a variety of pathological and clinical conditions. The diverticula are hernial protrusions of the mucous membrane through the muscular coat of the bowel, and they may project from its peritoneal surface or may be hidden in the fat between the layers of the mesocolon or in appendices epiploicæ; they are usually present in large numbers and affect most commonly the pelvic colon, but they may also be found with some frequency in the descending colon and in the transverse colon to the left of the middle line.

Pathological Changes.

Diverticulitis is essentially a disease of later middle life, between the ages of 45 and 65; the condition is commoner in men than in women and affects fat people more often than thin. Many of the patients suffer from chronic constipation, and it is likely that the resulting distension of the colon plays some part in the development of the hernial protrusions. The openings of the diverticula into the lumen of the bowel are very small, and they may easily be overlooked even at a post-mortem examination.

Illness associated with the presence of diverticula is generally caused by inflammation of their walls and of the tissues with which they are in contact. There may be retention of fæcal material in the diverticula, causing spasm of the colon; infection causing small abscesses in the wall of the bowel; or perforation leading either to diffuse peritonitis or a localised abscess or fistula. Such fistulæ may communicate with the surface of the body, with the bladder, or with other parts of the bowel. In another class of cases chronic inflammation leads to great thickening and sclerosis of the affected loop of colon, closely simulating carcinoma and causing partial or complete intestinal obstruction. There is some evidence to suggest that carcinoma is liable to develop in a segment of gut affected by chronic diverticulitis.

Varieties of Clinical Picture.

As the result of these pathological changes a number of clinical pictures may be produced and diagnosis may be difficult and delayed until a late stage of the disease, not only because the condition is insidious but also because it simulates a number of more common diseases. The clinical varieties most often seen are: (*a*) attacks of subacute inflammation associated with temporary spasm of the colon; (*b*) the formation of a localised abscess in the pelvis or left iliac region; (*c*) the development of an external fistula in the left iliac region; (*d*) diffuse perforative peritonitis; (*e*) involvement of the urinary bladder, by adhesions, cystitis, or the formation of a vesico-colic fistula; and (*f*) chronic and acute obstruction of the colon.

(*a*) *Attacks of subacute inflammation.*—The patient, who perhaps has noticed an increasing tendency to constipation, is seized suddenly with pain of moderate severity in the left lower quadrant of the abdomen, referred in some cases to the perineum, groin, or penis. The pain is spasmodic in character and increases in severity during the first few hours; it is made worse by exercise, and particularly by jolting—a somewhat characteristic symptom. The bowels are confined and the temperature rises to between 99° and 100° F. If the patient lies up and the bowels are cleared the first attack will, as a rule, subside within a week and leave him apparently in his usual good health.

Palpation of the abdomen in the early stages of the attack will reveal tenderness and possibly slight rigidity above the pubes just to the left of the middle

line. On bimanual examination a tumour can be felt, usually about the size of a small orange, high in the pelvis, and sufficiently movable to allow of its being pushed down on to the finger in the rectum; it is tender to the touch below as well as above. Active movements of the hip may elicit pain. If the attack subsides without the formation of an abscess the tumour gradually shrinks and usually becomes impalpable within ten days.

In the diagnosis of early cases X ray examination is often of great value. Two observations may be made: (1) A barium enema sometimes reveals a narrowing of the lumen of the gut for two or three inches in the inflamed and spasmodic area, the film even showing no barium here though the colon above and below is filled. (2) A barium meal may show numerous diverticula extending up the descending colon, which appear as small opaque areas about the size of peas, persisting after the main bulk of the barium has been evacuated. On the other hand, a negative X ray finding does not exclude diverticulitis, for the barium in the pelvic loop or rectum may mask the defect, and it is sometimes only on repeated examinations that the barium will enter the diverticula, because of the small size of their mouths, and because they may already be loaded with stiff fæcal material. Sigmoidoscopy is of little value in the diagnosis of diverticulitis, except in some cases by excluding new growth. The thickened inflamed loop does not allow the sigmoidoscope to approach it easily, and the openings of the diverticula into the bowel are so small as rarely to be visible.

During the attack the patient must be kept in bed on a light diet with plenty of fluids, and the contents of the large intestine must be liquefied as early as possible by large doses of a saline aperient; the bowel should be washed out by simple enemata, which must be given slowly and carefully, as they are apt to cause pain, and any sudden tension would be dangerous. After the attack has subsided further trouble may be warded off by the initiation of a régime which should be continued indefinitely. This has two main objects—the production of a bulky food residue in the colon and at the same time the reduction of this residue to a liquid form, of about the same consistency as that usually present in the small intestine. For this purpose an ounce of liquid paraffin should be taken three times a day and may be expected to produce two or three loose actions of the bowel daily. Should the patient at any time become sufficiently constipated to form a hard stool he should at once take a large dose of a saline purgative so as to produce watery motions. Any carelessness in this respect is likely to be at once followed by another attack of inflammation, which may go on to the formation of an abscess. As to diet, the patient must carefully avoid all fruits which contain small seeds (and these unfortunately are the most attractive to many people), such as figs, currants, strawberries, raspberries, and gooseberries; the seeds of these are small enough to enter the tiny mouths of the diverticula and produce inflammation. The foods that produce a bulky residue and prevent spasm of the colon are to be encouraged, such as brown bread, oatmeal porridge, and vegetables.

(*b*) *Abscess formation.*—Any attack of diverticulitis may go on to perforation and the production of a localised abscess, which will usually be situated either on the left side of the pelvis or in the left iliac fossa. Such abscesses require drainage, and this will usually be followed by a temporary fæcal fistula; the operation wound of the abdominal wall may be expected to become heavily infected, and the incision therefore should as far as possible be planned to allow for this, a short oblique or transverse cut being much preferable to a vertical one.

(*c*) *Fistulæ* in the left iliac or hypogastric region not only follow the drainage of an abscess, but may open spontaneously. In such cases a transverse colostomy will usually be necessary, but sometimes it is possible to short-circuit the affected segment of colon.

(*d*) *Acute diffuse peritonitis* from the perforation of a diverticulum or the rupture of a peri-diverticular abscess is the most dangerous complication of the disease, for the patients collapse rapidly from the severity of the toxæmia. They are not able to withstand a prolonged operation, and gas-oxygen and local anæsthesia are strongly indicated. The peritoneum must be drained, and, if the patient's condition will allow, it is advantageous at the same time to perform a colostomy above the site of the perforation.

(*e*) *Vesical complications.*—Diverticulitis of the pelvic colon not uncommonly involves the bladder, adhesions between the two viscera and the migration of bacteria from the colon causing chronic cystitis, with pyuria and frequency of micturition, and acute exacerbations from time to time; considerable general debility and cachexia are usual. In such cases the intestinal symptoms and signs may very easily be masked by the more obvious urinary ones, but a careful bimanual examination is likely to reveal the presence of the typical inflammatory tumour. If a vesico-colic fistula forms the patient will pass fæcal material per urethram, and his condition will rapidly deteriorate; cystoscopy is made difficult by the heavy infection of the bladder, but it may be possible to see the fistulous opening in its wall and to distinguish it from a malignant fistula by its more clean-cut edge. Where there is merely intermittent cystitis from adhesions this may be cleared up by initiating the régime of diet and aperients laid down above and by the administration of urinary antiseptics. For a vesico-colic fistula a colostomy should be performed.

(*f*) *Chronic and acute obstruction* resulting from diverticulitis are often indistinguishable from the forms due to new growths, and it has in fact been shown that a number of tumours due to diverticulitis have been excised in the belief that they were cancers of the colon. A diagnosis of diverticulitis as the cause of chronic obstruction—with diarrhœa, alternating constipation and diarrhœa, or constipation alone—may be suggested by a history of attacks of recurrent spasm and inflammation over a period of years. The symptoms of actual obstruction may be of longer standing than would be likely in a case of carcinoma; there is less cachexia, bleeding is less common, and a tumour is more often to be felt, slightly tender, movable, and usually as big as an orange. The presence of so large a mass without fixation would be strongly in favour of diverticulitis as against new growth. The treatment of such a case is to short-circuit the site of obstruction, if it is sufficiently high to allow this; for instance, for obstructive diverticulitis of the left half of the transverse colon the proximal part of the transverse colon may be joined up to the pelvic loop, and for obstruction at the upper part of the pelvic colon the transverse colon may be anastomosed to the lower part of the pelvic colon. If, as is often the case, the inflammatory mass is too low to allow of a short-circuit, a colostomy must be performed.

When diverticulitis causes acute obstruction the symptoms are those typical of obstruction of the large intestine; there is much distension, late vomiting, and the cæcum is palpable when in peristalsis, whilst it may be possible to feel the mass formed by the inflamed loop of bowel. For such patients a colostomy will usually be necessary, but occasionally they are fit enough to stand a short-circuiting operation; in this case it is advisable as a precaution to perform a temporary cæcostomy at the same time.

Fortunately, after drainage of the colon above a mass due to diverticulitis the lumen of the bowel at the site of the obstruction tends gradually to be restored, and a vesico-colic fistula will close; so that in some instances it is possible later on to close the colostomy. The bowel does not usually recover its lumen in less than three years, and in deciding whether the time has come to close the colostomy an X ray examination will, of course, be of great help. After such an operation the patient must carry on the régime described for early cases.

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Special Articles.

LIVER EXTRACT FOR THE TREATMENT OF PERNICIOUS ANÆMIA.

(Preliminary Report by the Medical Research Council.)

THE treatment of pernicious anæmia by addition of liver to the diet, introduced in America by Minot and Murphy, has already been widely adopted with encouraging results. An important development of this has recently become possible through the successful preparation, by Cohn and others, of an extract of liver containing in small bulk the unknown factor which produces the ameliorating effect. The treatment is thereby made available for patients who cannot tolerate the large daily consumption of liver itself.

Source of the Extract.

In the past autumn, through the courtesy of the Pernicious Anæmia Committee of Harvard Medical School, the Medical Research Council received information about this method of preparing liver extract, and were invited to make trial of it with a view to assisting introduction of the treatment in this country. On the basis of this information experimental work was undertaken in the Council's laboratories at the National Institute for Medical Research, and a modification of the American process was found, through the coöperation of Prof. F. R. Fraser, of St. Bartholomew's Hospital, to yield a satisfactory extract. To increase the scope of the work the Council then invited the coöperation of manufacturing firms likely to be interested, and arrangements were made for clinical trials of the preparations thus obtained in adequate quantity.

Supplies of liver extract made on a manufacturing scale by the modified process were received from the Boots Pure Drug Co., from the British Drug Houses, Ltd., and from Messrs. Burroughs Wellcome and Co.

It is at present impossible to gauge the therapeutic effects of liver extracts in pernicious anæmia by any other method than that of direct trial upon human patients. The extracts supplied by the three firms were therefore distributed widely to various hospitals, and clinical reports upon the activity of the several preparations have been received from the following physicians: Dr. John Cowan, Glasgow; Dr. S. P. Davidson, Edinburgh; Prof. E. C. Dodds, Middlesex Hospital; Prof. T. R. Elliott, University College Hospital, London; Prof. A. W. M. Ellis, London Hospital; Sir Thomas Houston, Belfast; Prof. W. E. Hume, Newcastle-on-Tyne; and Prof. E. Mellanby, Sheffield. To these, and the colleagues who have been associated with them in this work, the Council are much indebted.

Results in 34 Cases.

A total of 34 apparently clear cases of the disease came under treatment. The object of the trials was to test the activity of each extract as rapidly as possible rather than to watch the results over a long period of time. For this purpose the early increase in the count of reticulocytes, the young red cells with special staining properties, was adopted, as it had been found to be satisfactory in the American work. This rise is usually associated with clear sensations of improvement on the part of the patient, and it is succeeded by a progressive increase in the general red cell count while the relative proportion of reticulocytes diminishes.

Out of the 34 cases all but two showed a good response. In 23 of these the conditions were such that other reasons for the improvement than the administration of the extract were clearly excluded. In the remaining nine the response during treatment was no less marked, but the possibility of natural remissions or of the influence of other treatments, such as previous administration of fresh liver, rendered the conclusion less certain. The daily dose of extract corresponding to half a pound or 250 g. of liver generally brought a clear rise in reticulocytes, culminating about the twelfth or fifteenth day; double that amount daily excited an earlier reaction, with a maximum as early as the fifth day. As illustrating the remoter benefit in a case that had been treated with only the smaller doses, but over a longer period, the total red cell count rose from 750,000 to 5,000,000 in 34 days.

These effects are identical with those obtained with liver itself, although the effect of a given dose of the extract is not so great as that of the quantity of liver from which it is derived. Time has not yet permitted an estimate of any possible deterioration of the extract on keeping.

Suggested Line of Further Progress.

These preliminary reports enable the Medical Research Council to state that the preparations submitted have been found to be satisfactory. The process used in making these extracts has not necessarily any peculiar value as compared with possible alternatives, but it is one capable of ready application on a large scale. The Council believe that further progress will be best facilitated if extracts of the type which they have investigated are now made available, along with any others introduced apart from the Council's action, to the medical profession in general.

It is understood that supplies of these liver extracts will at once be obtainable, through the usual commercial channels, from the firms already named. The Council are not themselves able to deal with any applications for the material.

MEDICINE AND THE LAW.

Encephalitis Lethargica.

Is encephalitis lethargica a disease of which the incidence is attributable to lowered vitality? Is it more likely to attack a patient whose general power of resistance to disease has been lowered? If so, it might be an additional ground for awarding damages in an action arising out of injuries due to a motoring or railway accident. It has, in fact, been made the basis of a claim last month under the Workmen's Compensation Act, but if it were to be regarded as among the natural sequelæ of lowered vitality, it might figure in many other kinds of claim and insurance companies would find their commitments correspondingly increased. On Feb. 15th a collier, aged 25, who had been injured in a mine and had subsequently suffered from encephalitis lethargica, claimed compensation in the Wrexham County Court from his employers on the ground that the latter disease could be regarded as part of his "accident" arising out of his employment since the injuries for which his employers admittedly had to compensate him had lowered his power of resistance. Medical evidence was given in support of his claim, but Judge Roberts (who had the assistance of Dr. Geoffrey Williams, of Wrexham, as medical referee) did not regard the claim as based upon a sound medical foundation. Dr. H. Cohen, of Liverpool, a witness called by the employers, stated that he had knowledge of 1200 cases of sleepy sickness and that in no single case was the onset of the disease attributable to lowered vitality. The disease, he said, attacked people without regard to their state of health.

Hygiene in Barber's Shop.

A plaintiff has been awarded £150 damages and costs against a South Tottenham hairdresser for what the jury has found to be negligence on the part of the defendant. The plaintiff had his hair cut and, in the final trimming of the hair above the

ears with a razor, the barber's assistant cut the skin. Two days later the plaintiff's face began to swell and presently it was found that he was suffering from erysipelas and septic poisoning. He said the sponge used on his face was kept in the basin opposite his chair; so far as he could see, the materials were not sterilised; the razor was not placed in hot water but was merely stropped. A hairdresser employed by the defendant described the practice in the shop as follows. As soon as a customer had gone the instruments were dipped into a disinfectant fluid, and were then wiped and put aside for the next customer; sponges, after being dipped in the disinfectant, were rinsed; cuts were dealt with by sponging the wound and applying an antiseptic stick, which had previously been dipped in the disinfectant. Evidently the jury considered that this hygienic ritual had not been fully observed when the plaintiff was injured, or that it was inadequate. Dr. M. J. Cronin, who had attended the plaintiff, said it was a fair inference to attribute the erysipelas from which the plaintiff suffered to the way in which the cut had been treated. As a matter of law a hairdresser, cutting a customer's hair for money, must, of course, use proper skill in his calling; he must also see that his materials and treatment are antiseptic. Such a verdict will direct the attention of barbers to their liability.

Ordeals of Jury Service.

While a medical witness was giving evidence in a murder trial at Derby Assizes the other day a juryman collapsed and was removed in a fainting condition. The witness had been identifying a carving knife which he found stuck in the victim's throat. After some delay a doctor returned to court and stated that the juror had been upset by the ghastly details. "Tell him to bear in mind," said Mr. Justice Hawke, "that even more detailed description of what occurred has still to be given; the strain will come later." After a further adjournment the doctor informed the judge that it would be unwise for the juror to resume his duties. Under recent legislation there is power to continue a trial in the circumstances notwithstanding a juror's illness provided that both the prosecution and the defence agree to this course. Apparently there was no such agreement, for a new juryman was taken in, the whole jury was sworn afresh, and the case recommenced.

There must be many jurors to whom the task of listening to unpleasant details is physically repugnant and nauseating. The nature of the evidence is a ground on which a woman juror has a statutory right to apply to be excused from jury service. The words refer perhaps rather to reasons of delicacy in relation to sexual matters, but they would cover any case of an unpleasant or disgusting nature. When summoned to attend a court as a juror, nobody can tell beforehand what the cases will be about. Would a male juror, if of highly-strung temperament or neurasthenic type, be entitled to exemption from jury service on medical grounds? Or must he do his duty at the risk of collapse? The viewing of a dead body by a coroner's jury is an ordeal which is no longer indispensable. Under Section 14 of the Coroners (Amendment) Act of 1926 the coroner himself must view the body but the jury need not do so unless the coroner so directs or the majority of the jury so desire. This change in the law was advocated by the late Sir Mackenzie Chalmers, who was for many years chairman of the Coroners Law Committee established by the Home Office. He personally attended inquests and watched the conduct of jurors when viewing the corpse. The better class of jurors, he averred, evaded their duty of looking at the body while the more morbid-minded gazed their full. Though there have been indications that not all coroners approve the relaxation of the jurors' duty to view, this amendment of the law should mean that in practice the jury will be spared the ordeal of the view unless there are wounds, the sight of which might help to determine an uncertainty as to whether they were self-inflicted or not.

ROYAL INSTITUTE OF PUBLIC HEALTH.

The Present State of the Care of the Insane and the Mentally Defective.

Sir Frederick Willis took the chair on Feb. 29th, when Sir Robert Armstrong-Jones, Lord Chancellor's Visitor in Lunacy, delivered a lecture on this subject. The present conditions, he said, were unsatisfactory for both classes. The insane, owing to the relative lack of provision for voluntary treatment, came under certificate too soon; the mental defective was certified too late, as there were no places available to receive him. There was one law for the rich and another for the poor; the rich man who cared to be treated as a voluntary patient could go in and out as he liked, but the poor man had to wait until he was certified, and had to wait longer before he could get out. These, with other differences, constituted an injustice to democracy, and the present distrust of the system had resulted in the appointment of a Royal Commission, whose report went a long way to reassure the public mind, but left something to be desired in its suggestions for reform.

Need for Voluntary Treatment.

The exclusion of voluntary patients from public asylums was an anomaly. One of the great points urged in the report had been the necessity for the earliest possible treatment of all mental patients The recovery-rate for all cases was 40–50 per cent., and after early treatment it was 70 per cent., if all forms of threatening insanity were included. Many large teaching hospitals maintained psychiatrical out-patient departments, but a very large proportion of patients required ward treatment. For every certified patient there was one on the borderline, ready to be precipitated into the certified and probably permanent group if treatment were delayed. Insanity cost the country over £20,000,000 a year, and its prevention depended on early treatment. The Royal Commission had stated that certification should be the last resort, and not the pre-requisite of treatment, and had recommended that voluntary patients should be admitted into general hospitals, nursing homes, and private care.

The "Non-Voluntary" Patient.

It was, however, a serious defect in the report that it did not allow for a "non-voluntary" class of patients as well as a voluntary and an involuntary class. The will-power of a mental patient often became so malleable that it would readily yield to a superior will against the best interests of the patient and his friends; the patient was then non-volitional, but not involuntary. It was therefore important that the Board of Control should not only have cognisance of all voluntary patients, but should be able to have immediate access to them and should inspect the conditions under which they resided. The number of voluntary patients was now 1127, and if the voluntary system became general the total would probably reach 20,000. The Commission had put forward the "Provisional Treatment Order" as a means of bringing the non-volitional patient under treatment, but the three visits from a justice within one year might be prejudicial to the patient and should be made discretionary. Another defect of the Order was the stress it laid on prognosis, always a very uncertain factor.

Recent law suits had made it obvious that the certifying medical man needed protection from litigation, and the public from the consequences of a wholesale reluctance by the profession to certify any case. The Commission had proposed that the onus of proof of bad faith or lack of reasonable care should be placed upon the plaintiff, but it was doubtful whether this would afford sufficient protection.

Importance of Prevention.

The Chairman said that seven years' chairmanship of the Board of Control had impressed him with the

fact that the mental health of the nation was not improving. The increase was 2500 to 3000 cases a year, and the incidence- and recovery-rate had been stationary for 30 years. The general health, on the contrary, had greatly improved, and the expectation of life had increased. He realised that it was impossible to dogmatise on this question, but every doctor with whom he had discussed it had said that they had a much better chance of curing a patient if they took him in an early stage. The present law absolutely discouraged the treatment of the great mass of the mentally ill of this country until they became so bad that a doctor certified them as proper persons to be locked up. Until they got to this stage the public authority could not spend a penny on their treatment. The authorities concerned had chafed for years at that restriction, but the lethargy of public opinion had prevented anything from being done. The Royal Commission had reported two years ago, but Parliament had taken no action. Even the rich person, as the law stood, could only go as a voluntary patient to a very limited number of places. If the law were altered it was to be hoped that the number of voluntary patients would be even greater than that suggested by Sir Robert Armstrong-Jones. In spite of this increase the expense to the country would be diminished, since, owing to early treatment, a much smaller number would eventually become insane.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Revival of the Cautery.

Prof. August Bier's recent address at the Berlin Medical Society has caused almost as much sensation as the one on homœopathy which he read a year or two ago. He began by pointing out that Hippocrates regarded the cautery-iron as the most powerful remedy in existence, and his main thesis was that its use should not have been abandoned as it is to-day. The unpopularity of the cautery he ascribes to the fact that it produces ulcers which heal slowly and leave ugly scars, and he therefore recommends that not the skin, but the subcutaneous tissue should be burnt; for this purpose he cuts a flap, raises it, and applies the cautery beneath the skin, later closing the flap by suture. The results of this technique, he said, are excellent, and the wounds heal with insignificant cicatrices.

The red-hot iron is especially useful, he considers, in combating infection. In cellulitis, for instance, after having removed any necrotic tissue, he applies the cautery to destroy bacteria, and then closes the wound with loose sutures. This treatment is said to have checked the progress of cellulitis in all the 222 cases in which he has tried it. One of the results of the operation is a considerable rise of temperature, but this falls again soon afterwards as a result of profuse sweating, and the patient's general condition soon becomes normal again. In the wound itself there is generally a high degree of inflammation with serous and afterwards purulent discharge. After describing the use of the cautery in a number of other surgical conditions, he gave an interesting account of results obtained in medical cases in which a bacterial focus of disease is not directly accessible. In 12 cases of endocarditis lenta sent to him by physicians he made a large flap of skin over the left costal arch and cauterised the subcutaneous tissue; seven of the patients were cured and five died. He concluded his address by stating emphatically that fever and inflammation are powerful remedies which should only be combated when they are excessive, and may well be *induced* in chronic diseases where they are absent. In this connexion he alluded to the use of malaria to cure G.P.I. For many years Director of the Surgical Clinic of the University, Prof. Bier is very popular with the profession in Berlin and he was listened to with the greatest interest by a large audience, although many of its members remained somewhat sceptical.

Salvarsan in Late Syphilis.

The German Dermatological Society has promoted an inquiry into the question whether salvarsan therapy favours development of the so-called meta-syphilitic symptoms and of aortitis, as claimed by some authorities. With this object they have sent the following declaration to 130 eminent German and foreign specialists for criticism and comment.

> There is no statistical evidence that the increase of paralysis in civilised countries has any connexion with the administration of salvarsan, and the same is true of aortitis. The supposition that cases in which less vigorous treatment has been administered are not so liable to metasyphilis is unfounded. Salvarsan, if cautiously administered, is harmless, and the medical profession should prescribe salvarsan, bismuth, and mercury at an early stage of the disease without regard to unfounded theories.

Of the 130 persons to whom this declaration was sent, 120 returned it with an expression of agreement. Four did not concur in parts of the statement, whilst six did not reply at all.

The Campaign against Rheumatism.

The German Association for Combating Rheumatism, founded a year ago, has just held a meeting in Oeynhausen, the renowned brine spa in Westphalia. The secretary reported that special departments for the study of rheumatism have been established in the hospitals of Aix-la-Chapelle and Wiesbaden and in the university clinics of Berlin and of Leipzig. The delegate of the Government Health Department, Prof. Martinek, stated that rheumatism, though it does not endanger their lives, incapacitates a greater number of workmen than tuberculosis and involves large public expenditure for their maintenance. The Government is considering, he said, whether the care provided by the sanitary authorities for tuberculosis, venereal diseases, and crippling should not be extended to rheumatic diseases. Prof. H. Curschmann (Rostock) spoke on the so-called induration of muscles, which he believed to be a colloidal change, whilst Prof. Müller (Munich) held that it was due to muscular contraction. Dr. J. van Breemen (Amsterdam) proposed an international nomenclature for rheumatic disorders, and this question was left to a special committee which will have to submit proposals at the next meeting.

The first trial under the Prevention of Venereal Diseases Act took place in Munich on Dec. 31st, when a syphilitic man was found guilty of having had intercourse with a woman and infecting her, whilst aware that he suffered from the disease. He was sentenced to one month's imprisonment, but was discharged on probation.

The German Colonial Society is asking the Foreign Office to propose to the League of Nations that medical men should be allowed to practise in countries belonging to the League without having to take special examinations. In some of the mandated territories, it is said, there is a considerable shortage of medical men, which is prejudicial to the health of the native population, as is shown by an increase of sleeping sickness, tuberculosis, and malaria. The admission of qualified medical practitioners ought not to be restricted by the Mandatory Powers.

EXTENSION OF SUNDERLAND INFIRMARY.—Recently an extension of this institution, to be called the Princess Mary Wing, was formally opened. It consists of a three-storey building with 95 beds and has cost £36,000.

WORKPEOPLE'S HOSPITAL FUNDS.—In the six months since its inception 65,000 workpeople have joined the Liverpool penny-in-the-pound scheme. Last year the Leeds Workpeople's Hospital Fund raised £43,547, an increase of over £3000 upon the preceding year. One-fifth of the population of the city contributes, and the cost of administration has been reduced from 10 per cent. at which it stood a few years ago, to 3½ per cent. The motor accidents admitted to the Leeds General Infirmary have risen from 758 in 1925 to 1028 in 1927.

Public Health Services.

LOCAL AUTHORITIES AND SANITARY SCIENCE.

THE evidence submitted by the Ministry of Health and other Government departments before the Royal Commission on Local Government has now been published.[1] The Minister of Health submitted a memorandum and Sir W. Arthur Robinson, secretary, and Mr. E. R. Forber, deputy secretary, attended to give evidence. The Minister made it clear that his object was to put forward the weak points in the present system and to leave it to the Commission to devise remedies. The local authorities comprise 83 county borough councils, 62 county councils, and 1686 councils of county districts, which include 255 non-county borough councils, 785 urban district councils, and 646 rural district councils. The evidence submitted largely deals with the capacity of the 1686 councils of county districts to carry out the duties placed upon them by the many legislative enactments enacted between 1875 and 1926, a list of which is given. Statements taken from the 1923 survey reports of the medical officers of health of 35 urban areas (non-county boroughs and urban districts) and 37 rural districts are submitted as illustrations of the failure of certain councils to discharge their functions. The statements are purposely given without naming the districts. Among the 35 urban areas the chief failures have been with regard to water-supply, sewerage, sewage disposal, the provision of proper sanitary conveniences, and adequate scavenging. Among the 37 rural districts the failures have been somewhat similar, but the absence of proper scavenging assumes a more prominent place. It is pointed out that the number of statements are not to be regarded as percentages but only as illustrations. The memorandum goes on to discuss the reasons why medical officers of health should generally devote their whole time to public duties; why it is undesirable that a sanitary inspector should also act as surveyor; and the existing rate of progress towards the employment of medical officers of health and sanitary inspectors on proper terms. It is shown that in 1873 the proportion of whole-time medical officers of health was about one-quarter, and that now it is slightly over one-third. A statement in the appendix further shows that of the 1686 councils of county districts 120 (or 7 per cent.) have a whole-time M.O.H. of their own, while 385 (or 23 per cent.) have a whole-time M.O.H. jointly with other authorities, and 1181 (or 70 per cent.) have a part-time M.O.H., who is also engaged in private practice.

Infectious Hospitals.—Water-supply.

In spite of the legal provisions which allow the councils of small districts to combine for providing efficient hospitals for infectious diseases, there is much failure in this respect. The complicated and overlapping nature of the duties of the councils of county districts and county councils with regard to maternity and child welfare schemes, the supervision of midwives, the notification of births, the prevention of damage from ophthalmia neonatorum, the school medical service, and the prevention of tuberculosis are described.

The question of determining whether the disability of the council of a county district is due to restricted financial resources or to want of interest is acknowledged to be a difficult one, but it is pointed out that suitable candidates will not emerge from a population below a certain size. On March 31st, 1927, the Minister had not received the 1925 "survey" reports from 69 of the 1686 county districts, and the defaulters included five boroughs, and 32 urban and 32 rural districts. It is laid down as a paramount principle that local self-government must be encouraged. The difficulties in the way of action by a county council in default of the district council are fully considered. The special need for joint action between the local authorities in district planning and water-supply are pointed out.

It is shown in the report that up to the present there are only two regional advisory committees for water-supplies, one for S.W. Lancashire and the other for the Sherwood area of Nottingham, where it is necessary to consider the proper allocation of the underground water obtainable from the Bunter sandstone. These regional committees are not in any sense a joint water authority, but have purely advisory functions, and serve as a neutral ground where divergent interests can be amicably adjusted.

The report comments on the desirability of considering whether the distinction between the status and functions of the councils of non-county boroughs and urban districts and also between the councils of urban and rural districts should be maintained or not.

In the evidence submitted on behalf of the Home Office it was pointed out that the enforcement of the provisions for the sanitary conditions of workshops are thrown upon the local authorities, and that while the law is fairly efficiently administered in the larger boroughs and urban districts, it is reported by the factory inspectors to be inefficiently administered in many of the small boroughs and urban districts and in most of the rural districts.

Agricultural Problems.

On behalf of the Ministry of Agriculture it was pointed out that 124 non-county borough councils, in addition to the county councils and county borough councils, deal with the Diseases of Animals Acts, and that there is a diversity of interests between urban and rural areas. The former are more interested in having a free meat market, the latter in the health of the stock. A suggested remedy is the formation of joint committees for the geographical counties, which shall include representatives of the county council and all the other local authorities. The Ministry of Agriculture favours the appointment of whole-time veterinary inspectors, but the County Councils Association in October, 1925, passed a resolution that each county authority should decide for itself whether its circumstances required the services of a whole-time veterinary inspector or not.

The Ministry of Agriculture memorandum mentioned the duties thrown on local authorities by the Rats and Mice (Destruction) Act, 1919, but Sir Francis Floud in his evidence did not seem to think that the Act had effected any very marked reduction in the number of rats and mice, or that the powers given to local authorities to destroy the rats and charge the owners with the cost were often exercised. The memorandum also showed that there is much diversity in the provision made by county councils and county borough councils for agricultural education, and Bedford and Huntingdon were mentioned as striking examples of agricultural counties, which did little or nothing. In the Ministry's view every county with real agricultural interests should have a whole-time agricultural organiser and, as a rule, a poultry instructor, a dairy instructor, and a horticultural instructor in addition. Huntingdon has a horticultural instructor and Bedford a poultry inspector. From the point of view of clean milk and the public health an agricultural organiser and a dairy instructor are of first-rate importance.

We do not notice any mention of the duties cast upon local authorities by the shell-fish regulations, although shell-fish are now regarded as a not uncommon cause of typhoid fever.

[1] Minutes of Evidence taken before the Royal Commission on Local Government. Part IX. H.M. Stationery Office, Adastral House, Kingsway, W.C. 1928. 6*s*. net.

QUEEN'S HOSPITAL FOR CHILDREN.—The report for 1927 shows that the cost of each in-patient was £3 16*s*. 1*d*. per week, and of each out-patient 5*s*. 3*d*.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED FEB. 25TH, 1928.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 392 (last week, 369); scarlet fever, 1799; diphtheria, 1392; enteric fever, 66; pneumonia, 1604; puerperal fever, 55; puerperal pyrexia, 112; cerebro-spinal fever, 7; acute poliomyelitis, 9; acute polio-encephalitis, 3; encephalitis lethargica, 31; dysentery, 13; ophthalmia neonatorum, 109. No case of cholera, plague, or typhus fever was notified during the week.

The cases of small-pox were notified from the following 25 counties:—London, 1; Bedford, 1; Chester, 9; Derby, 11; Durham, 85; Kent, 1; Lancaster, 22; Lincoln, Parts of Holland 1, Parts of Lindsey 12; Norfolk, 3; Northumberland, 14; Nottingham, 6; Oxford, 2; Southampton, 1; Stafford, 7; Suffolk East, 6; Surrey, 1; Sussex East, 1; Warwick, 8; Worcester, 1; Yorks, North Riding 9, West Riding 78; Brecknock, 3; Glamorgan, 41; Monmouth, 68.

The number of patients at the Infectious Hospitals of the Metropolitan Asylums Board on Feb. 28th–29th was as follows:—Small-pox, 16 (1 of these being under observation); scarlet fever, 1746; diphtheria, 2624; enteric fever, 30; measles, 1436; whooping-cough, 167; puerperal fever, 13 (plus 12 babies); encephalitis lethargica, 72; poliomyelitis, 1; "other diseases," 35. At St. Margaret's Hospital there were 14 cases of marasmus and 13 babies (plus 7 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was 1 death from small-pox, 1 (1) from enteric fever, 117 (66) from measles, 5 (3) from scarlet fever, 36 (6) from whooping-cough, 35 (12) from diphtheria, 51 (6) from diarrhœa and enteritis under two years, and 98 (20) from influenza. The figures in parentheses are those for London itself. Of the 51 fatal cases of measles outside London, 8 were reported from Plymouth, 7 from Sheffield, 5 each from West Ham and Manchester, and 4 from Bristol. The number of stillbirths registered during the week was 258 in the great towns, including 48 in London. The death from small-pox belonged to Bradford C.B.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. J. A. O'Flynn to *Ganges*.
Surg. Lt.-Comdr. S. R. Johnston to *Dauntless*.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. J. F. Whelan, having attained the age fixed for compulsory retirement, retires on retd. pay.

Maj. E. C. Stoney retires with a gratuity.

Maj. R. O'Kelly, half-pay list, late R.A.M.C., retires on retd. pay on account of ill-health caused by wounds.

The undermentioned Capts. to be Majs.: D. Crellin (Prov.) and T. P. Buist.

Capt. (Prov. Maj.) C. H. G. Penny retires, receiving a gratuity, and relinquishes the rank of Prov. Maj.

Lt. J. G. Weston, from R.A.M.C., T.A., to be Lt. on prob.

Temp. Lt. R. Reynolds relinquishes his commn.

The undermentioned Lts. (on prob.) are confirmed in their rank: E. W. Hayward, M. F. N. Griffin, J. J. O'Dwyer, H. A. Ferguson, de L. Carey, M. G. de L'I. Sturm, and D. B. O'Sullivan-Beare.

G. L. Grieve and H. S. Littlepage to be Temp. Lts.

W. A. R. Ross and P. V. MacGarry to be Lts. on prob. and are secd. under the provisions of Art. 205, Royal Warrant for Pay and Promotion, 1926.

TERRITORIAL ARMY.

Hon. Col. J. Griffiths vacates the appt. of Hon. Col. R.A.M.C. Units, 54th (E. Anglian) Div. T.A., on completion of tenure.

Col. G. A. Troup to be Hon. Col. R.A.M.C. Units, 54th (E. Anglian) Div., T.A.

Lt. N. W. Hammer to be Capt.

INDIAN MEDICAL SERVICE.

Lt.-Col. (Bt. Col.) A. Spitteler to be Col.

Lt.-Col. F. F. Elwes retires.

To be Capts.: F. E. B. Manning and S. Smyth.

To be Lts.: J. Quigley, R. A. Haythornthwaite, R. D. Alexander and J. C. Lamont.

To be Temp. Lts.: Nanikram Chartsing Ramchandani, Hasibul Hasan Khan, Eruch Ardeshir Darukhanvala and Michael Rodriques.

Temp. Capt. Debendra Chandra Majumdar relinquishes his temp. commn. and retains his rank.

COMMISSIONS IN THE ROYAL ARMY MEDICAL CORPS.

The following have been granted commissions as Lieutenants on Probation in the R.A.M.C.: C. L. Day and G. T. L. Archer (Trinity Coll., Dublin); D. R. W. Burbury (London Hosp.); P. J. L. Capon (St. Thomas's Hosp.); P. Dwyer (Glasgow Univ.); K. McNeill (Edinburgh Univ.); M. R. Burke and P. W. A. Agnew (St. George's Hosp.); J. C. Gilroy (Edinburgh Univ.); J. W. Kendall (King's Coll.); W. A. R. Ross (Edinburgh Univ.); P. V. MacGarry (London Hosp.); and J. G. Weston (Guy's Hosp.).

DEATHS IN THE SERVICES.

Sir Robert Porter, whose death was announced in this column in our last issue, was the son of Mr. Andrew Porter, and was born in Donegal in 1858. He was educated at Foyle College, Londonderry, in Paris, and at Glasgow University, where he graduated in medicine and surgery in 1879. In 1881 he entered the Royal Army Medical Corps and saw service with the Ashanti Expedition of 1895–96, and was present at the capture of Kumasi. He also took part in the South African war and was awarded for his services two medals and seven clasps. In the late war, as Director of Medical Services of the Second Army in France, from its formation in 1914 until its dispersion in July, 1917, he at one time had over 1200 medical officers under his administrative control, including the medical services and 28 divisions, corps troops and army troops, 13 casualty clearing stations, 3 mobile laboratories, 14 sanitary sections and 5 army schools of sanitation—a vast organisation which he had himself built up. The Second Army numbered over 800,000 men at the Battle of Passchendaele, and was probably the largest individual army of modern times; it was employed in the region of Ypres, and received the first gas attack. He was mentioned six times in despatches, was created C.B. in 1916, C.M.G. in 1919, and K.C.B. in 1921. He was a Commander of the Order of the Crown and he held the Croix de Guerre, both Belgian honours. He married in 1903 Mary, daughter of the late Mr. John Johnston, of Barnard Castle, who survives him with three sons.

NATIONAL HOSPITAL, QUEEN-SQUARE.—The annual general meeting will be held at the hospital on Tuesday, March 27th, at 4.30 P.M.

COLLEGE OF NURSING: APPLICATION FOR A CHARTER.—A petition of the College of Nursing, Ltd., for a Royal Charter was heard on Feb. 29th by a Committee of the Privy Council consisting of Lord Warrington of Clyffe, Sir Maurice de Bunsen, and the Lord Advocate. On behalf of the College Mr. R. Mitchell Banks stated that the College, which was incorporated in March, 1916, had been founded to promote the better education and training of nurses and the advancement of nursing as a profession, and was precluded from applying its funds for profit earning. The membership at present stood at 26,300, admission to membership being limited to those entitled to have their names on the State Register, and the College did not propose to compete with or set up any substitute for the General Nursing Council. The College possessed lecture halls and laboratories and was in a sound financial position, an anonymous donor having subscribed £100,000. Opposition came from the Royal British Nursing Association, the Scottish Nurses' Association, the Poor-Law Officers' Union, and the Association of Hospital Matrons. Mr. Gavin Simonds put the case on behalf of the opposing bodies, submitting that the College had not performed such signal services as would justify the granting of a charter. After hearing the arguments Lord Warrington said that the Committee would report in favour of the College; the draft charter, however, would require amendment, particulars of which would be communicated in due course.

Correspondence.

"Audi alteram partem."

THE POSITION OF THE VOLUNTARY HOSPITALS.

To the Editor of THE LANCET.

SIR,—The correspondence in your columns on the voluntary hospitals has led me to consider the hospital situation as it exists to-day in my home city, and to ask myself what really—sentiment apart—there may be in the voluntary system to make us desire its continued existence.

A modern voluntary hospital may be likened to a garage for the reception of damaged human automobiles, equipped with a sufficient staff of skilled artificers whose aim it is to investigate the defects of the damaged human beings and to make as many as possible of them "fit for the road" again. As methods of investigation and treatment have been more and more elaborated it has been found necessary to add to the number of the artificers. At the Bradford Royal Infirmary with 210 beds there is to-day a visiting staff (not including honorary anæsthetists) of 17, or one for every dozen patients.

The usual poor-law hospital has never been staffed on these lines. On the outskirts of Bradford to-day there is a large poor-law hospital—a modern building with excellent wards containing several hundred beds. The medical staff consists of a solitary general practitioner who adds the medical charge of the hospital patients to his family practice. And consequently investigation and active treatment cannot be carried out in such hospitals, whose inmates are either derelicts or such as chiefly require nursing care. Public bodies have been for a good many years past gradually waking up to the need for, at any rate, an approximation to the ideal of fitting the damaged automobile for the road again. Early in this century the Bradford board of guardians changed the title of their hospital from poor-law hospital to St. Luke's Hospital. And they were fortunate enough to secure as medical superintendent a man with surgical experience gained in more than one large voluntary hospital. This surgeon, being also an able administrator and a "glutton for work," was able, with the aid of two resident medical officers, to do a considerable amount of "refitting" work for his patients. The result was the raising of St. Luke's Hospital's status much above that of all but a very few poor-law hospitals in the country. The hospital during the war was handed over to the War Office and its bed accommodation largely increased. After the war it was leased to the City Council and became the first municipal hospital in this country, a hospital which is now doing an immense amount of excellent refitting work.

I desire shortly to compare and contrast the (voluntary) Bradford Royal Infirmary with the (municipal) St. Luke's Hospital in order to discover whether the one is in any way capable of giving superior service to the community to the other. The efficiency of a repairing garage must depend upon (1) a sufficient supply of skilled artificers, (2) adequate opportunities for the training of these artificers, and (3) a management willing to and capable of providing the plant and appliances necessary for the work.

(1) As regards staff, at the infirmary there is a visiting medical staff of specialists in the ratio of 1 to 12 or 13 patients; at St. Luke's Hospital the medical staff (excluding residents) is 1 for every 50 to 60 patients.

(2) As at voluntary hospitals generally there is what may be termed an apprenticeship system in force at the infirmary. Before I was appointed to the charge of in-patients I had served as a resident for three years and as an honorary assistant surgeon for seven years. There is no assistant staff at St. Luke's Hospital and (resembling, I believe, in this respect all public authority general hospitals) what post-graduate experience has been gained by the various members of its staff has been obtained at the voluntary hospitals. The desirability of such training does not appear to have been realised and no provision for it has been made.

(3) But the chief difference between the two hospitals is in the lay managements and their relations to the medical staffs. In the voluntary hospital every member of the board may be assumed to be an interested sympathiser, since he or she has voluntarily accepted the duties of the office. The board meetings are held on the infirmary premises; the house committee meets there each week and at each of these weekly meetings there are not only members of the medical staff present, but the matron and the senior resident officer attend at the end of each meeting and are given the opportunity of bringing up for discussion any matter which either of them may desire to ventilate.

The governing body of St. Luke's Hospital is the City Council's Health Committee, and the affairs of the hospital appear as one item on a long agenda at meetings which are never held at the hospital. I have it on the authority of another corporation chairman of committee that only the chairman and deputy chairman of any committee are ever in a position to be au fait with the details of its departmental business. And I am very certain that most of the members of the Bradford Health Committee have never been even once "round the St. Luke's Hospital."

Moreover, the notion (one which underlies not a little of industrial unrest) that no paid member of a staff has any right to a say in the management, operates so that the members of the St. Luke's visiting staff are never consulted—never have any opportunity to confer with the health committee, and so are not in a position to guide these laymen with regard to what is required to keep the hospital "up to date."

The critics of the voluntary hospitals make the financial difficulty the burden of their cry. And in theory, with the city rates available, the City Hospital should be in a vastly superior position for providing the increasingly costly additional accommodation and equipment. But what has actually occurred in Bradford? Since 1921 the board of the Bradford Royal Infirmary has not only raised over £200,000 towards the cost of a new infirmary, but has built a nurses' home costing £30,000 and spent over £5000 on extension of the X ray department and nearly £1000 on extensions of the pathological and massage departments. Whereas, quite a number of improvements have been greatly needed at St. Luke's Hospital, which no party in the City Council dares to advocate because to carry out the work would inevitably require an addition to the rates.

And so my survey of the hospital situation in Bradford leads me very definitely to the conclusion that, whatever theorists may say, at present, in this city at any rate, the voluntary hospital as compared with the municipal hospital has (1) a relatively bigger staff (whose members are consequently able to devote more individual attention to their patients), (2) greater opportunities for the junior members of the staff to receive supervised training and experience, and (3) a board of management probably much more intensely interested in the work of the hospital and certainly much better able to supply the wherewithal required for institutional treatment.

Finally, I would again lay emphasis on the point that it is infinitely more easy to convince a small body of interested people of the need for expenditure on improvements and extensions than it is to persuade the members of an elected public body (however convinced they may be of the value of the suggested outlay) to risk their seats by voting for an increase in the rates.

I am, Sir, yours faithfully,

Bradford, Feb. 28th, 1928. JAMES PHILLIPS.

THE TREATMENT OF BURNS BY TANNIC ACID.

To the Editor of THE LANCET.

SIR,—I was interested to read in your issue of Feb. 18th (p. 336) the remarks of Dr. R. M. Gordon on the Treatment of Burns by Tannic Acid and also the annotation on that subject. I should like to stress the value of this method of treatment, which to my mind is far the most important advance as yet made in the treatment of burns and scalds. I am only surprised that the method is not more widely used, for not only is it definitely a life-saving measure, at any rate in

children, but the resulting scar is superior to that produced by any other form of dressing, while the method of application is comparatively simple.

Since the publication of the excellent article by E. C. Davidson [1] in August, 1925, I have used this method in my department of the Royal Edinburgh Hospital for Sick Children, and I have personally dealt with 38 cases of burns and scalds in young children. I will not enumerate here the many advantages that I have noticed in comparing tannic acid to such applications as picric acid, ambrine, adrenalin soaks, saline baths, and so forth, which I had used formerly, but I should like to draw attention to the very marked improvement in the death-rate. J. Fraser, working in the same hospital, quotes a death-rate of 38·7 per cent. for all cases, while during the last two and a half years I have lost only three patients in 38 cases—a case-mortality of 7·9 per cent.—and from the experience of six years previous to the introduction of this method I can assert that there has been little difference in the severity of the cases admitted, both as regards surface area and depth. In addition, the length of stay in hospital has markedly diminished and it is rare that skin grafting is required.

As regards the actual method of application, we have gradually modified Robertson's original method and we have found the most satisfactory technique to be as follows:—

1. A hypodermic injection of heroin is given if the burn is extensive.
2. The area is cleaned with methylated spirit and blisters are snipped and removed.
3. A *freshly* prepared aqueous solution of 2·5 per cent. tannic acid is sprayed on the surface, and this is repeated hourly for about eight hours until the coagulum shows a light brown tint which is steadily deepening.
4. The child is placed in an electric cradle to keep up the body warmth and to dry the wound, which is exposed to the air without any form of dressing. It is important that if at all possible no part of the burnt area should touch the bedclothes or bed, in order to get a complete coagulum.
5. The general treatment adopted consists in slight stimulation and the forcing of fluids by mouth, rectum, and skin if necessary.

It will be found that the coagulum steadily deepens in colour until it is almost black, and in the majority of cases this will remain absolutely dry. It begins to separate at the end of a week as a rule, and has generally become completely detached in 10 to 16 days, after which any simple ointment is applied. Most cases are discharged from hospital in 10 to 14 days. The child usually is extremely comfortable and does not pass through the ordinary toxic stage so commonly met with in severe burns, and the condition rarely gives rise to any anxiety.

I am, Sir, yours faithfully,

GERTRUDE HERZFELD,
Surgeon to the Royal Edinburgh Hospital for Sick Children.

Feb. 22nd, 1928.

THE EMPLOYMENT OF TUBERCULOUS PATIENTS.

To the Editor of THE LANCET.

SIR,—I am glad to see attention being paid to this subject. Very many patients make a conditional recovery under sanatorium treatment, but while money is spent freely in providing this, no corresponding effort is made to provide the necessary after-conditions. These include the observance of a few simple rules, home quarters modified on sanatorium lines—not necessarily expensive, though not possible everywhere—and remunerative employment, or its equivalent. Those who are lucky enough on leaving a sanatorium to find these conditions provided may live for years in health, leading useful lives; but these form a small minority. As a rule the convalescent is again ruined in health, mainly by semi-starvation through lack of employment. Owing to the exaggerated fear of infection, which wide experience (including that of Dr. Varrier-Jones's own colony) proves to be harmless if simple precautions are observed, even sputum-negative convalescents of exceptional ability and character are refused employment. Failing ordinary ways three others are possible: home-work, special workshops under medical supervision (as advocated by the late Dr. F. S. Tinker), and tuberculosis colonies on the pattern of Papworth. Each of these has its part to play, but they all need organising. The lack of them is causing a great waste of public money and much avoidable suffering.

I am, Sir, yours faithfully,

Farnham, March 5th, 1928. F. R. WALTERS.

MENTAL BREAKDOWN IN ADOLESCENCE.

To the Editor of THE LANCET.

SIR,—In the annotation on this subject in your issue of Feb. 25th it appears to me that you fall into the very error which you say should be avoided. The discussion at the Maudsley Hospital was on the prognosis of acute schizophrenia. You state of those cases which recover that "to describe them as dementia præcox is misleading" and that such a young person "ought not to be branded for life as a dement." The remedy is obvious; he can be designated a recovered schizophrenic. The objections to the term "dementia præcox" are many, well known, and need no recapitulation. The popular and, I take it, the usual medical connotation of the term "dementia" implies principally an intellectual determination, and though such determination undoubtedly does occur in schizophrenia, it is often more apparent than real, and appears to be fundamentally determined by emotional causes and to depend in essence on a withdrawal of interest from the outside world. It is a commonplace of psychiatric experience to find a surprising revival of intellectual performance in the most "hopeless dement" when suffering from an acute physical disorder.

Quite a number of puerperal (as well as many other) cases show an acute schizophrenic reaction, and yet (from a social point of view) recover completely. To adopt the view that if they recover they could not have been cases of schizophrenia appears to me simply to beg the question completely and to imply that diagnosis in mental disease is dependent not on clinical acumen but on end-results. Admittedly, our powers of prognosis in this disorder are poor, but the line of argument adopted in your annotation appears not only to lead nowhere—a sad but not uncommon phenomenon in psychiatric discussions—but, what is far more serious, to deny the facts of observation.

I am, Sir, yours faithfully,

J. B. STRAFFORD LEWIS.

Colney Hatch Mental Hospital, New Southgate, March 2nd, 1928.

CARBON DIOXIDE IN ANÆSTHESIA.

To the Editor of THE LANCET.

SIR,—May I thank Dr. Ross Mackenzie for his letter in your last issue and state that I think the freedom I have experienced from respiratory-centre anxieties during anæsthesia must be very largely due to having avoided, for many years, the use of morphia as a preoperative medication, except in administrations of gas-and-oxygen in adults.

I am, Sir, yours faithfully,

JOSEPH BIRT.

St. James's Court, S.W., March 5th, 1928.

PUERPERAL SEPSIS.

To the Editor of THE LANCET.

SIR,—Mr. Bonney's address in your last issue is most valuable and instructive. I would like to point out that the folds between the outer and inner labia should receive very special attention in order to lessen the chances of sepsis taking place. It is not so easy to clean them in a surgical sense as it is to deal with the ano-perineal region, but they are of equal importance. A good light is imperative and undue haste should be

[1] Surgery, Gynecology, and Obstetrics, 1925, xli., 202.

avoided. The result of neglect is that it is only too easy for the examining finger or the forceps blade to carry infection to the upper part of the vagina with disastrous after-effects. Nurses and practitioners alike should spare no pains in their effort to secure asepsis.

I am, Sir, yours faithfully,

JAMES G. MACASKIE, L.R.C.P. & S. Edin.

London, W., March 3rd, 1928.

GASTRO-DUODENAL ULCERATION.

To the Editor of THE LANCET.

SIR,—Although when I wrote my letter I had not seen Dr. Hurst's 1920 article, I am sorry he should have inferred from it that I suggested Prof. MacLean was the introducer of alkaline treatment in gastric ulcer. I could not do so. At the same time I do think the latter put the treatment clearly for the use of the practitioner and so far as I knew he was the first to do so. It would be most unfortunate should the patients be frightened off by the possibility of an alkalosis, the diagnosis of which is admittedly difficult. Dr. Hurst also mentions the danger of alkalis in slight renal inefficiencies, but if, as it would appear, he relies on a urea test to avoid that danger, then he must give alkalis to all these cases, for urea does not expose slight inefficiency. If Dr. Hurst is right in his theory of alkalosis appearing only in private cases, it is strange; mine have all been private cases. The warning of alkalosis has already had an unfortunate effect. I saw a case last week whose own doctor had advised alkali, but directed it in very tentative fashion, suggesting a fear to the patient. This treatment should be given adequately or not at all.

I am, Sir, yours faithfully,

A. J. D. CAMERON, M.B., Ch.B.

Northampton, March 5th, 1928.

To the Editor of THE LANCET.

SIR,—Dr. Hurst's letter, which appeared in your issue of March 3rd, implies that Dr. Cameron's letter published on Feb. 25th suggested that I was the first in the country to write on the intensive alkaline treatment of ulcer. There is no such suggestion in Dr. Cameron's letter. That I and my colleagues have brought forward concrete evidence of the value of this treatment is all that is claimed. Like Dr. Hurst and many others, I have used large doses of alkali at least 15 years ago. Questions of priority do not really interest me.

In our original paper it was stated that alkalosis is a bogy which need not be feared. I drew attention to the fact that very large doses of alkali might not be advisable in patients suffering from advanced renal lesions. Dr. Hurst states that alkalies are dangerous "with renal insufficiency which may be so insignificant that it can only be recognised by estimating the blood-urea." Unfortunately for this assertion, it is now quite well understood that changes in blood-urea are obtained only in advanced cases of nephritis; estimation of blood-urea is of no value in mild cases and gives no information in such cases. With regard to the alleged danger of giving alkali to patients suffering from advanced pyloric stenosis, I may say that I have repeatedly given alkali to such patients with no untoward results of any kind. Space forbids a full discussion of this subject at present, but I have treated the matter at length in a lecture on the Medical Treatment of Gastro-duodenal Ulceration delivered to the local branch of the British Medical Association at Canterbury. This lecture will be published very shortly. It is true that my personal observation has been practically confined to hospital cases, but I have talked to many of our staff, as well as to former students and to several general practitioners who are using the method. Not one of these has ever had the slightest difficulty. In my ward at the present time there is a patient who was treated by intensive alkaline treatment in another clinic. This patient had a letter, in which it was stated that alkaline treatment had been tried, but had to be discontinued because of the appearance of symptoms of alkalosis. We gave the usual alkaline treatment, but no signs of alkalosis appeared. This patient is now rapidly progressing towards recovery. It would be nothing less than a tragedy if the practitioner were to be prevented from using this treatment for fear of so-called alkalosis, a condition which under the circumstances of the treatment and with healthy patients is more theoretical than real.

Dr. Hurst's statements regarding the neutralising value of the various doses of alkali used are, of course, correct. Sodium citrate has been used instead of sodium bicarbonate by several physicians for many years. Bismuth oxycarbonate neutralises only very slowly and to a limited extent under the conditions of acid concentration likely to be met with in the stomach. It is, however, useful for controlling diarrhœa when this is present. Very often I use a powder which contains only 1 part of bismuth oxycarbonate in 13 parts of the powder. At present we need not trouble about complicated physico-chemical and biochemical considerations governing the correct dosage of alkali. The correct dose for practical purposes is that which controls the acidity and allows of a fairly regular action of the bowels. Beyond this, in the present state of our knowledge, it is not necessary to go. As far as teeth are concerned, might I point out that in the original paper the following sentence occurred: "Of course, it goes without saying that defective teeth should be attended to."

The intensive alkaline treatment gives such excellent results that it should be used by every general practitioner in the country. No special supervision or knowledge is necessary; many patients do quite well while at work. Its application is now so simple that it hardly inconveniences the patient.

I am, Sir, yours faithfully,

London, March 5th, 1928. HUGH MACLEAN.

To the Editor of THE LANCET.

SIR,—With reference to Dr. Hurst's letter that our observations are restricted to patients of the hospital class, may I say that I have examined many private patients, and that the results have been the same as those seen in the hospital. No symptoms attributable to the alkali were encountered. I have examined many patients under varying forms of treatment, and I have found universally that only those treated by the intensive method achieved the desired results in a short time, many of the others showing but varying degrees of improvement.

With regard to oral sepsis, it was assumed in our paper that the present-day practitioner was sufficiently conversant with modern practice not to overlook such an obvious possibility of trouble. My experience has been that nearly all cases had been examined and treated for oral sepsis or had been advised to consult their dental surgeons. In some cases this had not been undertaken by the practitioner, as he had at once handed the patient on to the special department concerned, to be taken over in toto, and not because he had not taken the possibility into consideration.—I am, Sir, yours faithfully,

London, March 5th, 1928. GEOFFREY FILDES.

DR. MUTHU'S "PULMONARY TUBERCULOSIS."

To the Editor of THE LANCET.

SIR,—Being so far away I was not able to see before now your issue of Jan. 7th, which contains a review of my book on Pulmonary Tuberculosis. I consider your reviewer has done scant justice to my work, which he has handled rather roughly while missing its main theme and purport. For one thing he has not made much discrimination between theories and suggestions in the work, which are valuable only so far as they are pregnant with new ideas, and facts which I have adduced to prove some of my contentions. He talks irrelevantly about the "offspring pneumococcus" and "brother of the gonococcus." But brother or sister, he can neither refute nor

ignore the important experiments made by such men as Maher, Stockwell, Sweany, who have conclusively shown the intenability of constancy of type of tubercle bacilli and the existence of a certain relationship between them and Gram-positive granules, cocci, bacilli and even granular forms brought about by means of suitable cultural media.

I should have thought that the work of a reviewer is, instead of sitting in judgment as if he were an infallible pope, to place the salient points of a book before the readers and leave them to judge whether it is a "good" or a "bad" one. The burden of my volume is to emphasise:—

1. That the ætiology of tuberculosis lies deeper than infection with tubercle bacilli.

2. That social and economic conditions create or favour the disposition to disease.

3. That nutrition and environment, instead of being side issues, control tuberculosis more than infection, which only rears its head when health is impaired by poor nutrition and bad social and economic environment.

4. That in proportion as the nations stand high in their economic prosperity and well-being of their people have they reduced the incidence and mortality of tuberculosis.

The whole tenor of the review shows bias and want of sympathetic insight in my work, and it would be bad day if the fate of a new publication should depend upon the prejudiced opinion of one man who may or may not be qualified for his task, and who may shelter himself under an assumed name or remain anonymous. Yours truly,

Egmore, Madras, Feb. 9th, 1928. C. MUTHU.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

REORGANISATION OF OFFICES (SCOTLAND) BILL.

ON Feb. 28th Sir JOHN GILMOUR (Secretary of State for Scotland) moved the second reading in the House of Commons of this Bill, which, he explained, provided that on the appointed day the Scottish Board of Health, the Board of Agriculture for Scotland, and the Prison Commissioners for Scotland should cease to exist. The powers and duties of these Boards, including the Prison Commissioners for Scotland, were to be transferred to and vested in a Department of Health for Scotland, a Department of Agriculture for Scotland, and a Prisons Department for Scotland, under the control and direction of one of His Majesty's Principal Secretaries of State, and consisting of a secretary and such other officers and servants as the Secretary of State may determine. The offices of the departments were to be situated in Edinburgh. The persons employed by the Board were to be transferred and attached to the department, and should be in no worse position as regards tenure of office, salary, and superannuation allowance than if the Bill had not passed. No vacancy in the office of member of the Scottish Board of Health existing at the passage of the Bill or afterwards was to be filled, and that part of Section 3 of the Scottish Board of Health Act, 1919, requiring that the Board of Health should at all times include certain members having the qualifications therein set forth was to cease to have effect. The right hon. gentleman said that the Bill was practically identical with that of last year. While it abolished patronage, the Bill did not lessen the possibilities of contact between outside interests in Scotland and the departments. The sole motive was one of efficiency. The Bill left intact the same responsibilities, and it gave to the Minister in charge in the House of Commons additional assistance in that, in future, he would have the valuable advice of first-class civil servants. There was no intention of transferring the work of the departments to London, and to make that clear he had inserted a provision in the Bill to the effect that the offices should be in Edinburgh.

Rejection Moved.

Mr. T. JOHNSTON moved the rejection of the Bill, and contended that although the offices would be in Edinburgh, the power that directed the departments would be in London. The Government were deliberately attempting to take away the administration of public affairs in Scotland from skilled men selected because of their specialised knowledge, and transfer them to men who, whatever scholastic qualifications they might have acquired at Oxford or Cambridge, had not proved their fitness to control the departments.

Mr. BARR seconded the rejection and Mr. WHEATLEY supported it.

Mr. SIDNEY WEBB urged the Government not to smother the real experts in these departments by administrative chiefs. He admitted that it would be to the advantage of the Minister to have an administrative chief in each department.

Mr. KIDD said that from his experience in the Board of Health there was probably no better service than that which was obtained in Edinburgh. There was, however, a great deal to be said for concentrated administration of the public service in the hands of the civil service.

The debate on the second reading was adjourned.

Administrative Efficiency.

The debate was resumed on Monday, March 5th.

Mr. SKELTON said that nobody had ever suggested that the administration of health and other things for which the Board of Health was responsible was less efficient in Scotland than in England. Neither in the Parliament of 1922 nor in this Parliament had there been a single question raised as to the administrative efficiency of the Board. If this Bill passed he did not believe that they would have first-class civil servants at the head of the departments in Scotland. He opposed the Bill because he was satisfied that the Government were taking a step which was unwise and unjustified and one which would not be of any essential use at all.

Dr. DRUMMOND SHIELS said that he opposed the Bill. It was an attempt in the name of efficiency, and with a timid suggestion of economy, to approximate the Scottish system of government to the English system. The Board system was a more democratic form of administration than the one-man system. A great part of the functions of Scottish boards was to deal with local authorities. Members of those boards were not simply secretaries and bureaucrats; they were people who, in many cases, had had outside technical and other training. Some of them had been actually members of local authorities, and had had to deal with local authorities. Such negotiations with local governing bodies constituted a very important element in Scottish administration and was a function much more suitable for a board than for a civil servant as head of a department. A Board was more impressive than a Secretary and had more human points of contact. It was true that the Board system, which included men who came in from the outside, involved patronage, but the nominations were made by the Secretary of State for Scotland, and it was not likely that that right hon. gentleman would nominate for these positions individuals who would be likely to damage the efficiency of his own departments, and do that for political reasons. It must be admitted, on the whole, that the men who had been appointed to these posts in the past had been able men. His fear was that under the Bill the higher posts would be filled from England. He was specially interested in the Scottish Board of Health. The Secretary of State for Scotland, speaking during the previous debate on this Bill, put a great deal of emphasis on the report of the Royal Commission which, he said, condemned the Board system in Scotland. But the Royal Commission was dealing with an entirely different kind of Board and was referring almost entirely to the Local Government Board. The Board of Health met at least once a week, and sometimes oftener, and had minutes kept of its proceedings. It was under the chairmanship of the Parliamentary Under Secretary for Scotland and was a very different Board from the old Local Government Board. On the present Board was the head of the National Health Insurance administration in Scotland, a representative of the legal department, and of the Pensions and Medical Departments. The appointment to the head of the Medical Department was likely to be vacant in a very few weeks. Who was going to be appointed to succeed the very distinguished present head of that department? There were men junior to him in that department who were suitable for that appointment and who were familiar with Scottish local government. Was one of those to be appointed or were they to have appointed to that important position in Scotland, requiring a very intimate knowledge of Scottish local authorities, an official from the English Ministry of Health? They must wait and see, but he was very suspicious that some change of that kind was likely to take place. The heads of the Scottish Medical Department and the junior medical officers had been in the past men who had been medical officers of health in important towns in Scotland. The House, he thought, would agree

that a man who had had experience of the work of a medical officer of health in some of the large towns of Scotland was the proper type of man to be at the head of their national medical department. The Bill took away some of the last traces of Scottish individuality and sentiment from the administration of their country. It was really a triumph for bureaucracy at the expense of national sentiment.

Departmental Unity.

Mr. JAMES STEWART said that, while he opposed the Bill, he thought that the proposals of the Secretary of State for having all the departments under one head would produce good results. If they took the health administration they would find that in Edinburgh it was divided into three buildings in three different parts of the city. If the Government would introduce any proposals for providing the buildings which were clamantly necessary so that they could have the Scottish departments under one roof there would be whole hearted support from the Labour Party for the Bill. It seemed to be suggested that there was difficulty in getting advice from the heads of the departments. His experience in office was a very brief one, but it taught him that it was easy to get into touch with the head of any department. Suppose that it was a medical problem relating to the health administration in any part of the country, and he wanted advice. He applied to the head of the department for his experience and advice. His advice was freely tendered and as freely accepted. Such advice was very generally acted upon because one knew that there was ability and experience behind it. There was complete independence on the part of the head of the department and on the part of the person who had to supply the Minister with advice. Furthermore they had the benefit every Friday morning of a meeting of the Board of Health at which the heads of the various departments were present. Either the Secretary or Under Secretary for Scotland took the chair and deliberated on the problems for discussion. They had the benefit of all the experience of the members of the Board, and, finally, the Minister had to assume responsibility. He it was who came to a conclusion even if, as happened sometimes, the whole of the Board was against him. If his experience and that of the Secretary for Scotland had been similar, then the changes proposed in the Bill could not be beneficial. It was beneficial also for local authorities to meet the Board of Health to discuss the health administration of the local bodies. For that very strong reason they ought not to depart from the Board of Health system and create new departments. There had been for some time a movement for securing unity among local authorities. Economy and efficiency could be developed in a way that was not possible under the present system. In Lanark, for instance, there were two or three authorities carrying on medical administration, each jealous of its own province, each running its own hospitals, and all carrying on in a way that was not beneficial. Here the Board of Health came in. With its officials it could meet the members of those conflicting authorities and discuss matters with them. Various men were at the Ministers' elbow to jog him and to advise him in his attempt to bring these people to a right understanding. By this Bill they were going to give that up and to put nothing in its place.

Mr. D. GRAHAM said that they had no complaints against the various Boards. He had met the Board of Health and had nothing but pleasant recollections of the meeting. He regarded every member of the Board as well qualified. They were always courteous and willing to hear anyone, and they always produced arguments for any decision they gave.

Reply to the Debate.

Mr. WATSON (Lord Advocate), replying to the debate, said that at present there was no first-class civil service position open to a Scotsman in Scotland, but the Bill would make that possible. In reply to Dr. Shiels, he said there could be no doubt whatever that the men who were appointed would have the same capacity for administration as the existing individual members of the Board in their particular department. What was wanted was administrative knowledge, the power of taking a concentrated opinion as an administrator, of all the expert knowledge available. That was the vital thing, and that was one of the reasons why he said, quite frankly, that the Boards were not as efficient as a department would be. At the beginning, and he hoped in succession, the existing members of the Board of Health would remain in office. In form their appointment would be different, but they would be retained and their expert knowledge would be continuously available. There would be no change in that aspect of the matter, and the Advisory Councils would carry on just as at present.

The motion for the rejection of the Bill was rejected by 161 votes to 66, and the Bill was read a second time and committed to a Standing Committee.

NATIONAL HEALTH INSURANCE BILL.

Mr. CHAMBERLAIN (Minister of Health), on Monday, March 5th, introduced into the House of Commons the National Health Insurance Bill, a measure to amend the National Health Insurance Act, 1924, and other enactments relating to health insurance. The Bill was read a first time.

The new measure incorporates many of the recommendations of the Royal Commission which carried out an exhaustive inquiry into the question of health insurance, and among its provisions the question of a more effective dental service for panel patients is dealt with.

HOUSE OF LORDS.

WEDNESDAY, FEB. 29TH.

SHORTAGE OF FACTORY INSPECTORS.

Viscount ASTOR asked whether it was proposed to increase the number of factory inspectors so that the inspections might be adequately carried out and unnecessary loss of life and health prevented. He said that there was a large number of places, rather over a quarter of a million, which were technically factories and workshops and liable to inspection. Of these about 129,600 were factories, as distinct from workshops. In order to carry on the inspection of these factories the whole staff consisted only of 205. From that number they had to deduct those organisers and technical advisers who did not carry out routine duties of inspection, so that there was only something like 170 to 180 men and women to carry out the inspection of over a quarter of a million premises. The duties of the inspector under the various Factories and Workshops Acts were multitudinous. There ought to be at least one inspection a year. There were certain premises where dangerous processes were carried on and where the atmosphere was apt to be vitiated, and these ought to be inspected about once every three months. It was obvious that a staff of 170 or 180, however zealous and hard-working, could not possibly get round so large a number of premises as a quarter of a million. In 1925 there were 27,663 factories, as distinct from workshops, which were never inspected at all. There were 1290 factories which were not inspected either in 1925 or 1926. That this state of affairs was unsatisfactory was proved by the fact that in 1926 there were 140,000 accidents, 800 of which were fatal. It was true that the number of fatal accidents in 1926 was slightly less than in the previous year, but that was very largely because in those industries where a large number of accidents occurred many firms were either working part-time or were closed down altogether. Actually, in the industries which were not stopped as the result of strikes, or from other causes, there was an increase of fatal accidents. He was informed on good authority that the staff of factory inspectors was about 25 per cent. below the figures fixed in 1921 as being desirable and necessary. The responsible Minister, speaking in the House of Commons, had admitted a shortage of inspectors, and year by year, when questioned about it, had said that the Government were waiting until the passing of the Factories Bill. He could not see why the Government were waiting for that Bill, more particularly as he regretted to see that year by year that very much-needed and oft-promised measure was repeatedly postponed. It was not sufficient to say that one or two more inspectors either had been or might be appointed. If it was true that there was anything like a shortage of 25 per cent., he hoped that they would be told that the Government contemplated appointing a sufficient number of inspectors so that those duties and responsibilities which were necessary, and which were intended by Parliament, might be properly carried out and that there might be adequate safeguards for health, limb, and life.

Home Office Reply.

Lord DESBOROUGH, speaking for the Home Office, said that the present position of factory inspection might be stated thus: In 1913 the staff numbered 222, which included 9 inspectors at headquarters; the establishment was now 206, including 20 at headquarters. In comparing these figures allowance had to be made for the transference of the factory inspection service in Ireland to the Free State Government and the Government of Northern Ireland, which involved a reduction of seven posts. This showed an actual reduction of strength of nine posts, which were given up in the interests of economy. The number of visits paid to factories and workshops had dropped, he was sorry to say, from 406,445 in 1913 to 300,368 in 1926. That decrease, however, related entirely to inspection of workshops—that was to say workshops where no power was employed. The number of visits to factories (which were the more important premises under the Acts) had not only been maintained, but had improved, the number of visits to factories in 1926 being 188,172, as compared with 176,591

in 1913. The present Government, and the previous Government, had been aware all along that the standard of inspection was too low, and that the inspectorate staff would have to be increased to secure the high standard and the enforcement of the law in factories and workshops which they would like to see attained. Moreover, if and when the Factories Bill, which was introduced in the House of Commons last year, became law, fresh burdens would be thrown on an already overworked staff. The policy of the Government, which, like their predecessors, had been to wait until that Bill had been passed and the whole question of the organisation and strength of the staff could be examined in the light of the new situation and duties created by the Bill, had been explained by the Home Secretary in the debate in the House of Commons in July, 1927. So far as the fire at the premises of the Waste Film Products, Ltd., was concerned, two questions arose: First, whether the Celluloid Regulations of 1921 made under the Factories and Workshops Act, 1901, which applied to all celluloid factories were sufficient to ensure the highest standard of safety in works where the waste products of film were dealt with. It had already been recognised that these general regulations were inadequate for that purpose. Secondly, whether this accident had revealed a need for the immediate appointment of nine inspectors in the metropolitan area where works of this nature seemed to have congregated. The Home Secretary was satisfied that the existing regulations were not sufficiently stringent. The film stripping industry was one of quite recent development, and was, in the opinion of the chief inspector of factories, appreciably more dangerous even than the film manufacturing industry. The Home Secretary therefore decided that two new codes of regulations should be issued, one dealing with the manufacture of the film and the other with works in which waste film was manipulated. Both these codes had now been made and came into force on March 1st. They introduced a number of new and important safeguards. At the same time the Home Secretary came to the conclusion that having regard in particular to the development of this industry in the metropolitan area, it was necessary to make some addition at once to the staff in the London divisions. He therefore obtained the sanction of the Treasury to appoint two additional men inspectors (included in the establishment of 206 already mentioned), and these appointments would be made as soon as possible. In the meantime, all waste film works had been specially visited by one of His Majesty's engineering inspectors of factories, and the steps necessary for compliance with the new regulations had already been taken in hand. He supposed that the new Factories Bill would be coming on next session, but in order to expedite matters the Home Secretary had already decided to advance the date of appointment of a committee to go into this question of additional inspectors so that no time should be wasted, although it would be very difficult, until they knew how the new Factories Bill was going to emerge, to draw up any regulations or to appoint many more inspectors. Nor could they claim that an increase of factory inspectors would obviate these accidents. Accidents occurred, unfortunately, in a great many places which were most carefully inspected, and he did not think that the inquiry which had been referred to satisfied the authorities that the deplorable accident was necessarily due to a lack of inspection, or would have been avoided had there been more inspectors.

Factory Inspectors and the Prevention of Accidents.

Lord ARNOLD said that the reply of Lord Desborough had done very little indeed to deal with this matter, and did not hold out any real hope of improvement. In his view, the number of factory inspectors ought to be doubled. The trouble in this matter was another instance of the indifference of the Government to labour interests. It was not economy to be cheeseparing in the matter of factory inspectors: it was parsimony of the worst description. If the Government had the will to deal with this matter they could do so perfectly well, without waiting for the Factories Bill.

Lord BANBURY OF SOUTHAM said that personally he regretted that Lord Desborough had not said that he was going to reduce the number of inspectors instead of increasing them. What they wanted was to give people an opportunity to work as long as they possibly could and not to hamper them by introducing all sorts of inspectors who cost money and did no good to anybody.

Earl RUSSELL said the insufficiency of factory inspection had been a growing scandal for many years. The solatium they were offered of two additional inspectors was really too ridiculous.

Lord JOICEY said he thought that there was a great deal of exaggeration with regard to the value of inspectors generally. He would welcome most heartily the appointment of more inspectors if he believed that they would reduce accidents, but he was very doubtful about it. If they consulted large employers they would find the opinion that strong pressure ought to be exercised on trade-unions to induce their members to make known to the employers, or the foremen, all cases where negligence was shown in carrying out regulations. That would have far more effect in stopping accidents than the employment of more inspectors.

Lord PARMOOR said that he did not doubt that the employers had good intentions in this matter, but he repudiated the suggestion that the workmen were to blame rather than the employers. He put no blame on either party. In the history of factory work it had been found that adequate inspection was necessary in order that the lives and health of the workers might be properly protected. There was no dispute on that question, and it was beside the point to suggest special intentions or special wickedness on either side. They were admittedly in the position of having a shortage or insufficiency of inspectors at the present time, and that ought to be put right at the earliest moment, not in the interests of a class, but in the interests of industrial life as a whole.

DANGER OF LEAD TETRA-ETHYL IN MOTOR SPIRIT.

Lord BUCKMASTER moved:

"That it is expedient that His Majesty's Government should immediately set up a Committee to advise as to the public danger that may arise from the use of lead tetra-ethyl in motor spirit."

He said that last summer he was speaking to an eminent medical man, and he asked him if he knew anything about ethyl spirit. He (Lord Buckmaster) replied that he knew nothing at all. The medical man said that he would very soon know something about it if the spirit was introduced here. It was one of the most dangerous things, he said, that men could possibly handle. He (Lord Buckmaster) said in those circumstances the Home Office or the Ministry of Health would either prevent or make strict regulations for its use. He was sorry to find that his optimism in that respect had had no foundation in fact. The spirit had been introduced here at the instance of one of the most powerful trade organisations in the world, and was being pressed for sale, and, so far as he knew, neither protection nor regulation from either the Home Office or the Ministry of Health had been provided with regard to its use. This spirit was discovered in 1859, but nothing was done with it until about 1879, when Prof. Franklin investigated it more closely. It was then classed as the most dangerous poison known. During the war it was considered as a proper poison gas, as it was a means by which they could disseminate more certain death than with any other poison. It was rejected, however, not because of any deficiency in its lethal power, but because its method of dissemination, either through shell or liberation from tanks, rendered it unsuitable. The detonation destroyed some of its chemical molecules and so destroyed some of its effects. This spirit had two great values. The first was that owing to the fact that it permitted of greater compression than ordinary petrol vapours it enabled cars to take gradients more easily than the ordinary spirit, and it also avoided the knocking which was due to some detonation not quite fully explained which in car-running was regarded as most unpleasant. What was to be said on the other side? The spirit contained as its very essence lead tetra-ethyl, which distinguished it from the ordinary motor spirit. If that ingredient was either put upon the hand or breathed in a person ran a very grave risk indeed of lead poisoning, and as it was capable of being dissolved in oil and was highly volatile, there was no need for any abraised surface on the skin for the poison to take effect. Indeed, an eminent scientific man had said to him recently: "I would not have one drop of that on my finger. If I had, I would spend the whole of the rest of the day trying to secure cleanliness." Like so many of these things, the action of the spirit was not necessarily instantaneous. Its real mischief was a form of lead poisoning more deadly than the lead poisoning effected through the use of paint or of lead glazing. It was an illness which came on without warning. If pain was a sentinel to warn one of the approach of illness, then the sentry often slept at his post, for diseases like cancer, tuberculosis, and lead poisoning passed him unchallenged and entered into the very citadel of life. That was the character of this particular poisoning, and unless some steps were taken the consequent danger which might result was very grave indeed to contemplate. The spirit had its origin in the United States, and hearing of the mischief it had caused, the Government of the United States appointed a commission some two years ago to inquire into the matter. The commission reported that no positive evidence could be obtained of harmful effects, but they urged strongly that suitable appropriation be requested from Congress for the continuance of the investigations. So far as he could see, even in America this substance was only allowed to be used subject to rules and regulations issued by an authority which was equivalent to the Ministry of

Health here. Those rules and regulations were really rather laughable. For instance, it was prohibited carelessly to spill the spirit on the floor of a garage. Had their lordships ever found a garage where there was not some petrol carelessly spilt on the floor? Again, they had to wash their hands before food or tobacco or anything else was conveyed to the mouth. Those were some of the suggestions made in America to protect people against the attack of an insidious and deadly disease, but they all knew that such rules were perfectly useless here, and he did not suppose that they were going to entrust the safety of the British people to recommendations made by the authorities in another country. This country was bound, if warned, to look after this matter. Had they been warned? Sir William Pope, professor of chemistry at Cambridge, wrote a letter to the *Times* of Feb. 22nd, in which, after quoting from this report, he said:—

"Pharmacological evidence has been published which proves conclusively that lead tetra-ethyl is absorbed from its dilute petrol solutions by animals through the skin and by the lungs. A garage hand who continually wets his skin with such a liquid, splashes it on his clothes, eats his food without scrupulous attention to cleanliness, or breathes an atmosphere tainted with the vapour, must thus be liable to contract lead poisoning; careless engine cleaners or repairers will incur a similar liability."

Prof. Baker, who was the President of the Chemical Society, a Fellow of the Royal Society, professor of chemistry and governor of the Imperial College of Science and Technology, wrote another letter to the *Times*, to the following effect:—

"Sir William Pope has, I think, understated the case against the use of lead tetra-ethyl in motor spirit. This substance does not act on the body as an ordinary lead poison, but it has a specific action which is much more harmful. It is little less poisonous than the corresponding mercury compound which caused the death of two promising young chemists at Oxford many years ago. Lead tetra-ethyl passes rapidly through the skin, is absorbed by the blood, and causes very severe nervous trouble. If sufficient is absorbed death occurs in a few weeks."

Prof. Baker also pointed out that whenever this spirit was put upon the skin it found its way into the body, even although the skin was unabraised. He concluded his letter with a statement which required further comment. He said:—

"I wrote, as President of the Chemical Society, to the Ministry of Health more than a month ago, calling their attention to the urgency of the matter. So far as I know, nothing has been done."

Not only had nothing, as far as he knew, been done, but this distinguished gentleman who was seeking to put his knowledge at the service of the Government received nothing for his pains except a curt acknowledgment of his letter. That was not the way in which a most eminent and distinguished scientific man should be treated by a Government department. If the statements he had quoted were doubted, then there ought to be a committee of inquiry. Unless the Government acted nothing would be done. These vast trade organisations did not care how many people suffered from the exploitation of their goods, for commerce had no conscience and trade no tenderness of heart.

Lord GREENWAY supported the motion. He did so, he said, in the interests of the oil industry as a whole. It might not be generally known that all the big petrol producing companies were engaged on the problem of how to produce the quality of natural or compounded spirit best qualified to meet the demands of the large portion of the public who now favoured high compression engines in motor-cars, but none of them was desirous of producing a spirit which was liable to criticism on the score of danger. The position as regarded tetra-ethyl spirit was that this new compound had been placed on the market, and while the company which introduced it claimed that it was non-injurious to health, various statements had appeared in the press suggesting that it was toxic in character and dangerous to the health, or even the life, of the people who used or handled it. The number of people who used or handled petrol was now so enormous that it was essential in the public interest that a properly constituted board, including some of our leading chemists and toxicologists, should be appointed definitely to settle once and for all the point in dispute.

Reply for the Government.

The MARQUESS OF SALISBURY, Lord Privy Seal, replying for the Government, said that he admitted that too long a period had been allowed to elapse before the Ministry of Health replied to Prof. Baker's letter of warning on this subject. If that eminent chemist felt in the least that he had not been properly treated, he hoped that he would accept from him (Lord Salisbury) the fullest apologies. As regarded the substance of Lord Buckmaster's speech, he did not think that a very great deal of difference would be found between the Government and the noble and learned lord. So far as the Government were concerned, there was no indifference towards this matter, the importance of which they fully recognised. They recognised the risk attaching to this commodity and proposed to deal with it. Tetra-ethyl itself was highly dangerous and had, of course, very serious consequences if it was not properly treated. But that did not mean that it must not be manufactured. Many highly dangerous things were manufactured, such as vitriol and arsenic. But the greatest care ought to be taken. As a matter of fact, tetra-ethyl was not manufactured here, but in America. A moment of special risk occurred when, having been imported into this country, it was blended with petrol spirit. This blending process involved considerable risk and that was a matter which was receiving the attention of the Home Office at this moment. Up to now, however, no case of lead poisoning had arisen from this commodity in England. Turning to the petrol, which had a very small admixture of this commodity, Lord Salisbury said that he was correct in saying that it was a mixture of 1 in 1300 parts, or something of that kind. He did not say that that eliminated all its toxic character, but he wanted the House to have a true picture of the exact condition of affairs. The blend was undoubtedly a very useful commodity and a very useful source of power. The Government had to consider how far they ought to interfere with a recognised improvement in the source of power, especially for aeroplanes. The Public Health Department in the United States appointed an investigating body consisting of seven distinguished scientific men to inquire into the danger of ethyl petrol—the spirit which was slightly diluted with this commodity. That committee reported that no positive evidence could be obtained of harmful effects attributable to the use of ethyl gasolene. The first conclusion of the committee was:—

"Drivers of cars using ethyl gasolene as a fuel and in which the concentration of tetra-ethyl lead was not greater than 1 part to 1300 parts by volume of gasolene, showed no definite signs of having absorbed lead after exposures approximating two years."

The second conclusion was:—

"Employees of garages engaged in the handling and repairing of automobiles and employees of automobile service stations may show evidence of lead absorption. In garages and stations in which ethyl gasolene was used, the amount of apparent absorption was somewhat greater than in those without ethyl gasolene";

he would like Lord Buckmaster to note this limitation—

"but the effect was slight in comparison with that shown by workers in other industries when there was definite danger from lead . . . and for the periods of exposures studied was not sufficient to produce lead poisoning."

And this was the third conclusion:—

"In the regions in which ethyl gasolene has been used to the greatest extent as a motor fuel for a period of between two and three years, no definite cases have been discovered of recognisable lead poisoning or other disease resulting from the use of ethyl gasolene."

He did not desire their lordships to accept the conclusions of that Report as conclusive. After all, it was not a British Committee and he had no means of testing the competence of the scientific men who were said to have conducted the inquiry. But undoubtedly it was a body of scientific men appointed by the relevant Department in the United States. He would therefore suggest that they must approach the condemnation of this commodity with a certain amount of caution and not fall into the error of assuming the worst until it was proved. Undoubtedly the British Government could not be indifferent to the risk to which the noble and learned lord now called attention, and they were about to undertake research of a careful character. For that purpose the Government were going to appoint an Inter-Departmental Committee, the composition of which had not been definitely settled, but he thought that it would consist of representatives of the Ministry of Health, the Home Office, and the Medical Research Council. This committee would be appointed forthwith.

Scientific Investigation.

Earl RUSSELL said that he was very glad that this Committee was going to be set up. They knew, of course, *prima facie* that lead poisoning was a most insidious and deadly disease, and if this material actually caused poisoning of that nature there would be the gravest necessity to take action.

Lord BUCKMASTER said that Lord Russell seemed satisfied. He wished he could be. An Inter-Departmental Committee was not what he wanted. What he desired was a scientific investigation, not an investigation by a Departmental Committee. Departments did not have eminent scientific men on their staffs.

The Marquess of SALISBURY: The Medical Research Council has.

Lord BUCKMASTER said that the Medical Research Council had a certain number of doctors, but what they wanted were scientific men, such as eminent chemists, who knew about

this matter and would satisfy Lord Salisbury who spoke lightly of one in 1300 that watered vapour from nickel would poison with one in 20,000. Prof. Baker had written to him a letter in which he said that after this spirit had burned in the cylinders of the engine the lead came into the exhaust as a fine quality of lead oxide and that in a crowded street, like Piccadilly for example, the unfortunate passer-by would be exposed to the same danger of lead poisoning as painters were before they were protected by Government action. It was not a matter of small moment because people were only found to be slightly affected. They would go on getting more and more affected till illness and death overtook them and they would have done nothing except to wait nine months and then set up an Inter-Departmental Committee. But he knew that it was no use asking for more. If the House was divided and they beat the Government it would have no effect. Therefore, having done his duty by calling attention to the matter, he did not propose to proceed with his motion.

The Marquess of SALISBURY said that if Lord Buckmaster thought that there should be scientific men added to those who sat on the Inter-Departmental Committee he would represent that view in the proper quarter.

The motion was, by leave, withdrawn.

TUESDAY, MARCH 6TH.

DESTRUCTION OF VERMIN BILL.

Lord STRATHSPEY introduced the Public Health (Destruction of Vermin) Bill which was read a first time.

HOUSE OF COMMONS.

TUESDAY, FEB. 28TH.

Post-office Messengers and Flat-foot.

Mr. AMMON asked the Postmaster-General whether all applicants for service in the Post-office as messengers suffering from flat-foot were medically rejected; and whether the number so rejected could be given.—Sir W. MITCHELL-THOMSON replied: It is the practice to reject all applicants for service in the Post-office as boy messenger who are found to be suffering from flat-foot. The number so rejected during the year 1927 was 17.

Night Work by Youths in Mines.

Mr. LEE asked the Secretary for Mines whether he was aware that many of the 28,000 youths of the ages between 14 and 16 working underground at the collieries in the country were expected to work on the night shift; that youths of a similar age were not allowed by law to work on the surface at night; whether any of these youths were medically examined as to their physical fitness for working underground; and whether he was prepared to recommend that facilities be granted for placing youths working underground on the same basis as youths on the surface.—Commodore H. DOUGLAS KING replied: I am aware of the facts referred to in the first two parts of the question. As regards the third part, medical examination is the practice at some collieries, but it is not compulsory by law. In reply to the last part of the question I would remind the hon. Member that in 1911, when Parliament passed the Coal Mines Act of that year, it was decided that the prohibition against night work by boys on the surface should not be extended to underground work, and that this decision was confirmed by the Washington Convention of 1919 and by the Employment of Women, Young Persons and Children Act of 1920. I am not at present aware of any sufficient reason for reversing this decision.

WEDNESDAY, FEB. 29TH.

Tetra-ethyl Poisoning.

Lieut.-Commander KENWORTHY asked the Minister of Health whether he will state the steps, if any, he proposes to take to prevent injury to workmen, persons employed in garages, and the general public from ill-effects from the use of petrol diluted with lead tetra-ethyl; if he was aware that lead tetra-ethyl was a poisonous substance easily absorbed by the blood through the skin and that its use in garages had been proved to be dangerous; and whether, until his department has examined into this matter, he will consider issuing special warnings to garages and to the local authorities.—Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) replied: Lead tetra-ethyl is a poisonous substance, and those who make or sell preparations of petrol which contain it should take or advise precautions designed to avoid danger from handling or using these products. There is at present no definite evidence of injurious results following the use of ethyl spirit. The desirability of further inquiries or research into the nature of any danger to the public from its use is being considered in conjunction with the Medical Research Council, but pending such inquiry it is not proposed to take action on the lines suggested by the hon. and gallant Member.

Lieut.-Commander KENWORTHY asked if the right hon. gentleman had seen a letter in the *Times* recently from the holder of one of the Chairs of Chemistry at Cambridge in which he said that even the flooding of a carburetter and getting this petrol on the skin might bring about very serious poisoning, and in view of this would the right hon. gentleman issue a warning interim to the report of the investigations:

Dr. VERNON DAVIES: Is the right hon. gentleman aware that Switzerland prohibited this ethyl petrol by ordinance in 1925?

Sir KINGSLEY WOOD: No, Sir.

Persons Found Dead in London.

Mr. DAY asked the Home Secretary the number of persons who were found dead, and the number who remain unidentified, in the Metropolitan police area for the last 12 months to the last convenient date.—Sir WILLIAM JOYNSON-HICKS replied: In 1927, 707 dead bodies were found in the Metropolitan Police District; 77 bodies of newly born infants, and 74 other bodies remain unidentified.

Municipal Water-supplies.

Sir ROBERT THOMAS asked the Minister of Health whether, in view of the increasing competition among municipal authorities for water-supply sources, he would consider making a Government allotment of water-bearing areas in order to prevent small authorities from being squeezed out by large wealthy cities.—Sir KINGSLEY WOOD replied: The interests of small authorities are carefully watched over by my Department when examining proposals for water supplies and, where necessary, reports are made to Parliament. A general survey and allotment of water-bearing areas would entail considerable expense and delay, and my right hon. friend prefers the system which has been adopted of appointing Regional Water Committees who estimate local needs and then proceed to formulate definite proposals for supplying them.

Milk Production.

Mr. GRIFFITHS asked the Minister of Agriculture the quantity of milk produced and available for consumption in 1923, 1924, 1925, 1926, and 1927, and the quantity or approximate percentage that was surplus to normal requirements during those years.—Mr. GUINNESS replied: The following is the information asked for: The estimated production of milk (exclusive of milk fed to calves and pigs) per million gallons, in England and Wales in the undermentioned years, from June 1st to May 31st, was as follows: 1923–24, 1100; 1924–25, 1117; 1925–26, 1135; 1926–27, 1150. As a result of the special inquiries made in connexion with the last Census of Production it was estimated that the amount consumed as liquid milk in 1924–25 was about 765 million gallons. With regard to the latter part of the question Mr. Guinness regretted that he had no information.

Deaths from Small-pox.

Mr. GROVES asked the Minister of Health the number of deaths from small-pox in England and Wales for each quarter of the past year.—Mr. N. CHAMBERLAIN replied: The following provisional figures for England and Wales in 1927 give the deaths in respect of which "small-pox" appeared on the medical certificates as the cause, or one of the causes, of death:—

Quarter ended March 31st	.. .. ..	19
,, June 30th	.. .. ..	17
,, Sept. 30th	.. .. ..	7
,, Dec. 31st	.. .. ..	6
		49

THURSDAY, MARCH 1ST.

Pensions Hospitals in Scotland.

Dr. SHIELS asked the Minister of Pensions: (1) If it was his intention to close Bellahouston and Craigleith Hospitals; and, if so, were the patients to be sent to Edenhall. (2) Whether he proposed to return all Scottish disabled men in English hospitals to Scotland for treatment near their own relatives and friends. (3) How many hospital beds the Ministry was to maintain in Scotland: and would those beds be in one hospital or in more than one.—Major TRYON replied: Arrangements have been made, as I have already informed the House, to close Craigleith Hospital, the return of which has been asked for by the Parish Council, at an early date. The patients remaining in that institution, who are occupying less than one-fifth of the available accommodation, will be removed to Edenhall, which has been placed at the disposal of the Government by the Scottish Red Cross and is being fully equipped as a modern surgical and medical hospital. The closure of Bellahouston Hospital is not at present in contemplation. I am anxious to extend the Ministry's tenure of this hospital and, as I have already informed the hospital, I am in communication with the

Glasgow Corporation with that object and I am in hopes that a satisfactory agreement will be reached. It is not possible to estimate at the present time what will be the final requirements of the Ministry in Scotland in respect of special hospital accommodation of its own, but it is my intention now, as heretofore, to provide such accommodation of the best quality that can be obtained for as long as it may be required. The only cases having Scottish domicile who are receiving in-patient treatment in England are cases suffering from certain special disabilities, such as diabetes and certain types of neurasthenia, for which treatment is now provided by the Ministry in a limited number of centres. It is not proposed to alter these arrangements, which are in the interest of the pensioners and have worked satisfactory for some years past.

Panel Practitioners and Certification.

Mr. MALONE asked the Minister of Health what evidence he had to show that laxness in certification by panel doctors accounts for the increase of over 11 per cent. in the amount paid in sickness and disablement benefits in 1927; whether he had any information regarding the increase in sickness claims in various parts of the country, such as the coalfields and other depressed areas; and what were the further measures with regard to certification which he proposed to adopt?—Mr. CHAMBERLAIN replied: The hon. Member appears to be under a misapprehension. I have never suggested that the whole of the increase in the sickness and disablement benefits in 1927 as compared with 1926 is attributable to laxity in certification. But for the evidence that some want of care in certification is a factor in the increase, I would refer to the speech of Sir Kingsley Wood in the debate on Feb. 20th. It is not practicable to ascertain the precise amount of the claims in any particular area, but such evidence as is obtainable indicates that the increase is general and is not limited to particular districts. The whole question of certification is now being examined in consultation with the Insurance Acts Committee of the British Medical Association.

Danger of Tetra-ethyl Spirit.

Colonel HOWARD-BURY asked the Home Secretary whether his attention had been drawn to the use of a new motor spirit called ethyl; and whether he had held or would hold an official examination into the nature of this motor spirit in view of the dangers of lead posioning that might occur from its use.—Mr. CHAMBERLAIN (Minister of Health) replied: As announced by my noble friend, the Lord Privy Seal yesterday, I propose to set up a Committee of Inquiry, on which the Home Office, Air Ministry, the Medical Research Council, and the Ministry of Health will be represented, and which will also include the Government chemist and some men of science unconnected with any department. The exact composition and terms of reference of the Committee have not yet been decided.

MONDAY, MARCH 5TH.

Medical and Sanitary Service in Kenya.

Mr. BARR asked the Secretary of State for the Colonies whether his attention had been called to the fact that it had recently been laid down by the Deputy-Director of Sanitary Service in Kenya that the minimum for a large rural native district, containing 100,000 to 200,000 people, was one district medical officer, one medical officer of health, one dispensary medical officer, two European nursing sisters, one European sanitary inspector, and possibly a European hospital assistant and a storekeeper, and, in addition, an adequately trained native subordinate staff, a hospital with accommodation for about 100 patients, and from 6 to 12 out-dispensaries; whether this standard was in force in any of His Majesty's Colonies; and whether pressure was brought to bear on the Governments to increase their medical staffs up to this standard.—Mr. AMERY replied: My attention has been drawn to the interesting address to the Royal Society of Tropical Medicine and Hygiene in which this statement occurred. So far as I am aware the standard suggested has not been endorsed by any Colonial Government, and as the medical requirements of the Colonies differ so greatly it would be impracticable to regard such a suggestion as a general standard of administration. Oversea Governments are everywhere endeavouring to maintain a medical staff adequate to their requirements and I am glad to say that in some of the African territories a relatively high standard has already been achieved.

Factory Inspection in Iraq.

Sir ROBERT THOMAS asked the Secretary of State for the Colonies whether there was any inspection of the factories in Iraq where dates were packed for export to this country; and, if not, whether, in view of the danger of disease being introduced by this means, he would inquire into the conditions of cleanliness under which this industry was carried on.—Mr. AMERY replied: Stringent measures were taken by the Iraq health authorities during the cholera epidemic of last year to ensure that all dates exported from Iraq were free from any possibility of infection. I am not aware whether under normal conditions the Iraq Government require inspection or consider it necessary. I am, however, asking the High Commissioner for a report on the subject. I am advised that there is no evidence of disease being introduced into this country through the medium of Iraq dates.

Medical Examination of Canadian Emigrants.

Mr. BENJAMIN SMITH asked the Secretary of State for Dominion Affairs whether, as Canadian medical officers had been detailed for duty in this country for the purpose of examining and certifying intending emigrants, emigrants so approved were secured against rejection after embarkation; and whether his department was furnished with statistics of the number of persons accepted or rejected by these officers.—Mr. AMERY replied: Intending settlers in Canada who are examined and passed by Canadian medical officers are not required to undergo further examination and are not liable to rejection on medical grounds on arrival at the port of entry unless essential information has been withheld, or unless some disease has developed in the interval. The new arrangements only came into operation on Feb. 14th and no information is as yet available as to the numbers of applicants accepted or rejected by these officers.

Isolation of Pauper Small-pox Contacts.

Mr. CHARLES EDWARDS asked the Minister of Health whether he had received a letter from the Bedwellty Council asking that the law should be amended so as to provide that in the case of persons who had been in contact with, or were suffering from, small-pox or other infectious disease in casual wards of poor-law institutions, the medical officer of health should be empowered to have them detained and isolated for such period as he might deem necessary; and would he take steps to ensure this being done.—Sir KINGSLEY WOOD replied: The reply to the first part of the question is in the affirmative. As regards the second part, there is power under the present law to secure the removal to hospital of any person who is suffering from a dangerous infectious disease and is without proper lodging or accommodation, but as at present advised, my right hon. friend does not think it necessary to introduce legislation conferring similar powers in regard to persons who have been in contact with cases of such diseases, though not themselves so suffering.

Naval Hospitals.

Dr. VERNON DAVIES asked the First Lord of the Admiralty if he could give a full list of naval hospitals at home and abroad; the number of beds in each hospital; and the number of personnel attached to each hospital.—Lieut.-Colonel HEADLAM (Parliamentary Secretary to the Admiralty) replied: The particulars asked for are as follows:—

Royal naval hospitals at—	Beds available.	Salaried staff.	Wages staff.	Total of staff.
Haslar	625	62	334	396
Plymouth	590	52	272	324
Chatham	490	55	279	334
Portland	104	12	37	49
South Queensferry ..	103	8	29	37
Great Yarmouth ..	213	4	38	42
Malta	365	31	131	162
Cape of Good Hope ..	48	5	21	26
Bermuda	77	6	16	22
Hong-Kong	107	11	70	81

TUESDAY, MARCH 6TH.

Closing of Military Hospitals.

Dr. VERNON DAVIES asked the Secretary of State for War how many beds had been reduced by the closing of the military hospital, Chatham, the Alexandra military hospital at Cosham, and the military hospital at Devonport, respectively; what economies had been effected by this reduction; and what reduction in hospital personnel had followed the closing of these hospitals.—Mr. DUFF COOPER (Financial Secretary to the War Office) replied: So far as the War Department is concerned the answer to the first and last parts of the question is that there has been a net reduction of 215 equipped beds and of 15 officers, 15 nurses of the Queen Alexandra's Imperial Military Nursing Service, and 149 other staff. As regards the second part of the question, in addition to economies in beds and staff, the buildings have been set free for other Government purposes or ultimate disposal.

Methylated Spirit Drinking in Scotland.

Mr. BARR asked the Secretary of State for Scotland how many arrests for drunkenness, alleged to be due to the drinking of methylated spirits, were made by the police in

the city of Glasgow during the 12 months ending Oct. 31st, 1927; and the number of such arrests in each of the wards of the city where they took place or, alternatively, the numbers in each of the respective police divisions of the city.—Sir J. GILMOUR replied: The following return shows the number of persons apprehended for being drunk and incapable in the various police divisions of the city of Glasgow, during the year ended Oct. 31st, 1927, whose condition is believed to have been due to the drinking of methylated spirits:—

Division.	Males.	Females.	Total.
Central	63	52	115
Western	86	31	117
Eastern	23	7	30
Southern ..	59	20	79
Northern	26	8	34
St. Rollox ..	6	3	9
Queen's Park ..	4	—	4
Maryhill	1	—	1
Govan	4	3	7
Partick	7	2	9
Marine	24	6	30
Total ..	303	132	435

Skimmed Milk and Rickets.

Mr. EVERARD asked the Minister of Health whether he had received any reports that the prevalence of rickets among children in some districts was largely caused by the fact that they were being fed on imported skimmed milk which was marked unfit for babies; and whether he would take steps to prevent the use of this commodity as a food for infants.—Mr. CHAMBERLAIN replied: I have seen a newspaper report of a statement of a lecturer on agricultural economics to this effect. I am advised that the feeding of infants on skimmed milk in any form would tend to produce rickets, and it is for this reason that I have made regulations requiring the words "Unfit for babies" to be displayed on the tins. Recently I have issued fresh regulations which will have the effect of displaying these words more prominently.

Mr. EVERARD asked whether in the public interest the right hon. gentleman would publish figures showing the value of English milk as compared with this foreign condensed milk as a clean product?

Mr. CHAMBERLAIN: I do not think it is necessary to publish figures showing the difference between skimmed milk and full milk.

Mr. HARDIE: Is the right hon. gentleman not aware that the people who buy this skimmed milk have no choice, and does he still adhere to the view he gave in answer to a question as to the effect of skimmed milk on rickets?

Mr. CHAMBERLAIN: That does not arise out of the question, but I think the hon. Member has misinterpreted what I said.

Mr. KIRKWOOD: Does the right hon. gentleman not think that it is a libel upon our civilisation that mothers should have to buy this skimmed milk because they cannot afford to buy other milk to feed their babies?

Dr. VERNON DAVIES: Is the right hon. gentleman aware that a lot of this skimmed milk is sold in such small packages that people will buy it whether it is marked "Unfit for babies" or not; and will the right hon. gentleman not issue regulations to provide that this milk shall be sold in very much larger containers?

Mr. CHAMBERLAIN: I must have notice of that question.

Mr. REMER: Is the right hon. gentleman not aware of the growing importation of this skimmed milk and will he not look further into the matter to see whether some other steps cannot be taken to avoid this increased consumption which must be bad for the people who consume it?

Mr. CHAMBERLAIN: I cannot accept that statement. The hon. gentleman seems to consider that children and adults are in the same position. My advice is that though skimmed milk is very bad for infants it may be quite wholesome for adults.

Colonel HOWARD-BURY: Cannot the right hon. gentleman prohibit its sale for infants?

Mr. CHAMBERLAIN: I would do so if I was sure that the prohibition would be adhered to.

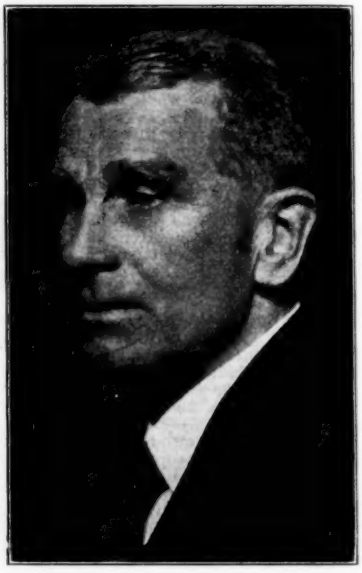
BEGGING LETTERS.—The chief constable of Cardiff informs us that medical men in various parts of the country are receiving begging letters from a person using the name of Jean N. Atherton, whose address is given as 10, Brook-street, Riverside, Cardiff. In a letter which has been forwarded for our inspection the writer requests that a loan should be sent in order to rescue her father from temporary difficulties, represents the family as being in great distress. We are informed that the writer of these letters has been convicted of obtaining charitable contributions by false pretences.

Obituary.

JAMES WHEATLEY, M.D. LOND., D.P.H.

WE regret to announce the death last Saturday of Dr. James Wheatley, medical officer of health for the county of Shropshire. His health had failed for some months and he was unable to attend the annual dinner of the Medical Officers of Health, of which he was this year president. His loss will be felt far beyond the bounds of the public health service, for his views on hygienic problems were widely conceived and had attracted considerable attention.

Dr. Wheatley was educated at King's College, London, where he held a Clothworkers' exhibition. He qualified in 1886, a year later taking his London degree with honours in medicine, his M.D. in 1890, and finally the diploma in public health of the Edinburgh Royal Colleges. After holding house appointments at King's College Hospital and demonstrating anatomy in the College, he went to Blackburn as house surgeon to the Infirmary, and remained there to become superintendent of the fever hospital, police surgeon, and finally medical officer of health. At Blackburn he made a careful study of hygienic conditions in the cotton industry, but it was not long before the office of county medical officer for Shropshire fell vacant, and he began in 1901 what proved to be his life work. In every department of county health work Wheatley made his impression, his name being especially associated with the problems of dental disease, of school hygiene, and of infant mortality. For many years he collected data regarding the incidence of dental caries in the county, and in 1920 he published the result of an examination of nearly 50,000 children, comparing the condition of their teeth before and after the period of the Great War. While before the war only 5 per cent. of the under-fives were free from caries, no less than 44 per cent. of post-war children showed no dental decay, and Wheatley vehemently attributed this improvement to the restriction and modification of food which occurred during the war, especially as it affected the supply of sugar, bread, and milk. The consumption of sweets, of highly refined flour, and of crustless bread he regarded as the chief cause of dental caries, and he inaugurated a campaign on these lines to combat deterioration in the teeth of the nation. In regard to infant mortality, although he admitted as factors in its reduction the schemes of child welfare and antenatal care, he satisfied himself that the chief effect was brought about by the operation of the Education Act of 1870 in raising the intelligence of the people and the sense of responsibility in parents. So long as education kept ahead of material advancement he forecasted continuous improvement in the health of mothers and young



DR. JAMES WHEATLEY.

children. His views on public health as a whole were set out with vigour and eloquence in an inaugural address last October to the Society of Medical Officers of Health. Put in a sentence Wheatley's message was that we cannot afford to interfere with the healthy and vigorous development of body and mind of a large proportion of the people in order to prevent a few accidents—a new and stimulating conception of relative values in public health work. He refused to accept as relevant the outlook of that part of the medical profession whose experience is entirely with sick and abnormal persons. The lasting value of medical work must be judged by the improvement in the living of the ordinary individual. In his assessment of health factors, Wheatley put in the first place research in its widest sense. He was keenly alive to the enormous benefit to medical practice arising out of modern physiological research, and desired an inquiry into the causes of the fall in the death-rate from tuberculosis during recent years. This intellectual detachment did not, it may be remarked in passing, prevent him taking a large part in founding a county sanatorium. But only second in importance to research he placed the education of the people, which he felt should be accelerated and made more effective by a vastly improved system of health visitors and district nurses to give instruction in the homes.

One of his colleagues in the health service writes: "Any profession or calling would be the poorer for the loss of a man of Wheatley's type. He was never bound by convention or tradition, and his philosophic mind had a refreshing way of throwing new light on old problems. While he spoke out his thoughts fearlessly, he was tolerant of the views of others, and showed himself a courageous and generous disputant. His kindly personality will be long missed, for he embodied more than most people the characteristics laid down in the fifteenth Psalm."

Medical News.

THAMES FLOODS.—On Jan. 16th a conference was held at the Ministry of Health to investigate the flood disaster of Jan. 6th and 7th (see THE LANCET, Jan. 21st, p. 142). The committee then appointed has now issued its report and recommends that the statutory duty of inspecting flood defence works within the county of London should definitely be placed with the County Council. In order to warn the public in case of danger it is suggested that an announcement should be made by the Meteorological Office, after consultation with the Port of London Authorities, when high tides may be expected; that a special watch should be kept at Southend, warning to be given to the appropriate authorities when the tide reaches a specified point; and that a watch should be kept at selected points, public notice being given in the locality if the water reaches the danger level. The Committee also recommends that legislative power should be obtained by the L.C.C. to prohibit the erection of new dwellings, or the re-erection of old dwellings, on land within flood limits, unless their floors are up to a specified level; but it recognises that the use of basement rooms for sleeping quarters can only be satisfactorily dealt with as part of a general housing programme. Where basements do not now comply with the statutory requirements, it is recommended that steps should be taken at the earliest opportunity to prevent their being used as dwellings. The Committee has also come to the conclusion that the L.C.C. should consider whether special protection should not be afforded where there is likely to be damage of an unusual kind—e.g., from creosote or mineral oil contained in tanks and barrels near the river.

Dr. W. J. Howarth, who has been medical officer of health for the City of London since 1913, has resigned his position owing to ill-health. Dr. W. M. Willoughby will continue to act until a successor has been appointed.

CENTENARY OF THE ROYAL FREE HOSPITAL.—Presiding at the 100th annual meeting of this hospital, Lord Riddell announced that the governors intended to celebrate its centenary by raising £100,000 for the endowment of the dental clinic which is being provided and equipped by Mr. George Eastman, of New York, and a further £210,000 for building developments. The building will include "The Queen Mary Wing," a new maternity department, an extended pathological department, and new kitchens.

BELGRAVE HOSPITAL FOR CHILDREN.—Miss Barwell, matron of this institution at Clapham, is retiring after 29 years' service. In that period the accommodation has increased from 14 to 79 beds.

ROYAL SANITARY INSTITUTE.—A sessional meeting will be held at the Municipal Buildings, Taunton, on Saturday, March 24th, at 10.30 A.M., when discussions will take place on Present Tendencies Regarding Disinfection and on House Refuse Collection.

HARVEIAN SOCIETY.—A clinical meeting of this society was held at the Royal Waterloo Hospital on Feb. 16th, Dr. Herbert French, the President, in the chair. Seven cases were shown by members of the staff of the hospital and two cases by Dr. G. de B. Turtle and Dr. R. Cove-Smith.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.—A meeting will be held on Tuesday, March 13th, at 8 P.M., in the Lecture Theatre of the Society's House, 17, Bloomsbury-square, London, W.C., when Dr. H. H. Dale will give an address on Some Reactions of Pharmacology on Pharmacy.

ADRIAN STOKES MEMORIAL FUND.—It is announced that the Rockefeller Foundation has contributed £2000 to each of the two funds being raised at Guy's Hospital and at Trinity College, Dublin, in memory of the late Prof. Adrian Stokes.

UNIVERSITY OF LONDON MEDICAL GRADUATES' SOCIETY.—The first general meeting of this society will be held on Monday, March 12th, at 5 P.M., at the Rooms of the Medical Society of London, 11, Chandos-st., Cavendish-sq., W. The draft constitution and by-laws will be considered.

PROGRESS OF CONTRIBUTORY SCHEMES.—Since the Birmingham Contributory Scheme came into operation on New Year's Day, nearly 1000 firms have joined it, and nearly a quarter of a million workmen have been enrolled.—Some 700 business concerns are now coöperating with the recently established Liverpool Penny-in-the-Pound Fund, and 67,000 people are entitled to treatment.

AN EXHIBITION FOR A HOSPITAL.—Sir Philip Sassoon, hon. treasurer of the Royal Northern Hospital, has this week thrown open his house in Park-lane for a remarkable exhibition in aid of the funds of the institution. Many of the exhibits, which included examples of early English, French, and Italian needlework, furniture, and curiosities had never before been publicly shown. Treasures were lent from such famous houses as Knole, Arundel Castle, and Hardwicke Hall. Among them were the mitre and gloves of William of Wykeham, the coronation gloves of Edward VI., and the vest worn by Mary Queen of Scots at her execution.

DONATIONS AND BEQUESTS.—Mrs. Annie Louise Normandy, Anerley, London, S.E., left £3000 for charities, including £500 to the South-Eastern Hospital for Children, £300 each to the Royal Blind Pensions' Society, the National Society for Epileptics, Vauxhall Bridge-road, and £200 to Norwood Cottage Hospital, the British Home and Hospital for Incurables, King Edward's Hospital Fund, and the Earlswood Institution.—Lady Hudson, G.B.E., has given £3000 to the Westminster Hospital for the perpetual endowment of a ward in memory of the late Sir Robert Arundell Hudson, G.B.E., treasurer of the hospital from 1921 to 1927.

VICTORIA HOSPITAL, CAIRO.—The British Red Cross Society and the Grand Priory of the Order of St. John of Jerusalem have presented a clinic to this hospital, and last week it was opened by Lord Lloyd, British High Commissioner for Egypt. The hospital was founded in 1881 to provide treatment for the British, American, German, and Swiss communities, as well as Egyptians. Lord Lloyd at the same time unveiled in the hall of the hospital a tablet erected by British Freemasons in memory of the late Sirdar, Sir Lee Stack, who, at the time of his assassination, was District Grand Master of Egypt and the Sudan.

THE LATE DR. RAGLAN THOMAS.—The death is reported from Exeter of Dr. John Raglan Thomas, on Feb. 29th, at the age of 72. The son of a Llanelly doctor, he was educated at Epsom College, and entered St. Bartholomew's Hospital with a Gilchrist Scholarship, qualifying M.R.C.S. in 1876. He later graduated as M.B. Lond., with honours in midwifery and proceeded to the M.D. degree in 1887. After house appointments at St. Bartholomew's he succeeded to his father's practice and carried it on for ten years, being appointed medical officer of health for the Llanelly rural district. In 1888, however, he moved to Exeter where he became certifying factory surgeon, Admiralty surgeon, and medical referee under the Workmen's Compensation Acts. Dr. Thomas had many non-medical interests, and was a good shot, being for many years associated with the Volunteers. In 1908 he was Assistant Director of Medical Services for the Wessex Division of the Territorials, from which he retired with the rank of colonel in 1912, being appointed hon. physician to the King. He leaves a widow with two sons and five daughters.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
MONDAY, March 12th.—5 P.M., WAR. Paper: Lieut.-Colonel Ernest Cowell, R.A.M.C. (T.A.): The Pathology and Treatment of Traumatic Wound Shock.
TUESDAY.—5 P.M., THERAPEUTICS. Papers: Dr. G. J. Langley: Clinical Assay of Digitalis. Dr. E. A. Carmichael: Stramonium in the Treatment of Post-Encephalitic Parkinsonism. 8.30 P.M., TROPICAL, PSYCHIATRY, NEUROLOGY, BALNEOLOGY. Special Discussion on Neuroses in the Tropics. Openers: Lieut.-Colonel O. A. R. Berkeley-Hill, I.M.S., Dr. H. S. Stannus.
WEDNESDAY.—5.30 P.M., SURGERY: SUB-SECTION OF PROCTOLOGY. (Cases and pathological specimens at 5 P.M.) Short Papers, &c.: Mr. Cuthbert Dukes: Demonstration of the Pathology of Obstruction Due to Tumours of the Bowel. Mr. W. B. Gabriel: Intestinal Obstruction Following Colostomy. Dr. Arthur F. Hurst: The Recognition, Cause, and Treatment of Megacolon in Adults. Sir Charles Gordon-Watson: A Method of Removing Adenomata of the Sigmoid Through the Rectum.
THURSDAY.—5 P.M., DERMATOLOGY. (Cases at 4 P.M.) Cases: Dr. W. J. O'Donovan: Chronic Exfoliative Dermatitis with Universal Melanodermia and Blood Changes. Other cases will be shown.
FRIDAY.—8.30 P.M., ELECTRO-THERAPEUTICS. Communication: Mr. A. E. Hayward Pinch: The Present Position of Radium Therapy. A discussion will follow.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.
The meeting of the Society of Medical Officers of Health for a discussion on the Control of Small-pox, fixed for March 16th, is postponed until a date to be announced after publication of the report of the Departmental Committee on Vaccination.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.
THURSDAY, March 15th.—8.15 P.M. (at the Royal Army Medical College, Millbank). Demonstrations by Dr. E. Hindle, Lieut.-Colonel Clayton Lane, Lieut.-Colonel W. P. MacArthur, Dr. Alan McKenzie, Dr. A. C. Stevenson, Dr. J. Gordon Thomson, Prof. Warrington Yorke, Dr. U. Owen, and Lieut.-Colonel A. C. H. Gray.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, W.
MONDAY, March 12th.—8.30 P.M., Discussion on the Carrier Problem, to be introduced by Dr. J. E. McCartney, followed by Dr. John Freeman.

LONDON CLINICAL SOCIETY.
THURSDAY, March 15th.—8.30 P.M. (at the London Temperance Hospital), Clinical Evening.

EUGENICS SOCIETY.
WEDNESDAY, March 14th.—8.30 P.M. (at the Rooms of the Royal Society, Burlington House), Dr. W. R. K. Watson: Brixton Mental Tests.

BIOCHEMICAL SOCIETY.
FRIDAY, March 16th.—4.30 P.M. (at University College, Gower-street, W.C.), Annual General Meeting: Communications.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.
TUESDAY, March 13th.—5 P.M., Dr. Izod Bennett: Some Problems of Nephritis. Goulstonian Lecture (1).
THURSDAY.—5 P.M., Goulstonian Lecture (2).

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.
FRIDAY, March 16th.—5 P.M., Prof. Sir Arthur Keith: Variations and Anomalies of the Cervical and Costal Series of the Vertebral Column and their Application in Diagnosis and Treatment. Demonstration of Specimens.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith.
MONDAY, March 12th.—10 A.M., Dr. Dowling: Skin Department. 2 P.M., Dr. Trevor Davies: Gynæcological Department.
TUESDAY.—10 A.M., Medical Registrar: Medical Wards. 2 P.M., Mr. Sinclair: Surgical Out-patients. 2 P.M., Mr. Hamblen Thomas: Throat, Nose, and Ear Department. 4.30 P.M., Dr. Shaw (Special Lecture): Abdominal Pain.
WEDNESDAY.—10 A.M., Dr. Burnford: Medical Wards. 2 P.M., Mr. Tyrrell Gray: Operations. 2.30 P.M., Mr. Donald Armour: Surgical Wards.
THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 2 P.M., Mr. Simmonds: Surgical Out-patients. 3 P.M., Sir Henry Simson: Gynæcological Ward.
FRIDAY.—10 A.M., Dr. Pritchard: Medical Wards. 12 noon, Dr. Ironside: Clinical Demonstration. 4.30 P.M., Mr. Vlasto (Special Lecture): Clinical Examination of Labyrinthine Diseases.
SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy Department. 10 A.M., Dr. Owen: Medical Diseases of Children.
Daily, 10 A.M. to 5 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments. Anæsthetic and Operative Surgery Classes.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.
WEDNESDAY, March 14th.—4 P.M., Mr. Norman Lake: The Surgical Dyspepsias.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham.
MONDAY, March 12th.—2.30 to 5 P.M., Medical, Surgical, and Gynæcological Clinics. Operations.
TUESDAY.—2.30 to 5 P.M., Medical, Surgical, Throat, Nose and Ear Clinics. Operations.
WEDNESDAY.—2.30 to 5 P.M., Medical, Skin, and Eye Clinics. Operations.
THURSDAY.—11.30 A.M., Dental Clinics. 2.30 to 5 P.M., Medical, Surgical, and Ear, Nose, and Throat Clinics. Operations.
FRIDAY.—10.30 A.M., Throat, Nose, and Ear Clinics. 2.30 to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.
On Wednesday and Friday, at 2.30 P.M., there will also be demonstrations of Skin and Medical (Children) Cases by Dr. W. Jenkins Oliver and Dr. C. E. Sundell respectively.
On Tuesday and Thursday there will also be demonstrations of Surgical Cases and Cases for X ray by Mr. W. E. Tanner and Dr. A. C. Dixon respectively.

NATIONAL HOSPITAL, Queen-square, Bloomsbury.
MONDAY, March 12th.—2 P.M., Dr. Hinds Howell: Out-patient Clinic. 3.30 P.M., Dr. Kinnier Wilson: Epileptic Variants.
TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Hinds Howell: Disorders of Sensation.
THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Bailey: Electrical Testing of Muscles (in Out-patient Department).
FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Sir Percy Sargent: Cervical Ribs.

HOSPITAL FOR SICK CHILDREN, Great Ormond-st., W.C.
THURSDAY, March 15th.—4 P.M., Dr. W. G. Wyllie: Nephritis in Children.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.
WEDNESDAY, March 14th.—4 P.M., Consultations.
FRIDAY.—4 P.M., Mr. Gill-Carey: Focal Sepsis in the Nose and Throat.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
TUESDAY, March 13th.—5 P.M., Dr. Wilfrid Fox: Nævi.
THURSDAY.—5 P.M., Pathology Demonstration.

ST. PAUL'S HOSPITAL, Endell-street, W.C.
THURSDAY, March 14th.—4.30 P.M., Mr. W. K. Irwin: Pain in Genito-urinary Affections.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.
WEDNESDAY, March 14th.—4.30 P.M., Dr. R. Donaldson: Bacteriology in its Connexion with Forensic Medicine.

PEOPLE'S LEAGUE OF HEALTH.
WEDNESDAY, March 8th.—6 P.M. (at the Medical Society's Rooms, 11, Chandos-street, Cavendish-square, W.), Dr. A. F. Tredgold: Mental Deficiency.
FRIDAY.—6 P.M., Prof. V. H. Mottram: Common Errors in Diet.

ANCOATS HOSPITAL POST-GRADUATE LECTURES, Mill-street, Manchester.
THURSDAY, March 15th.—4.15 P.M., Dr. Langley: Exophthalmic Goitre.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.
TUESDAY, March 13th.—4.15 P.M., Dr. F. E. Tylecote: Calcium Therapy.
FRIDAY.—4.15 P.M., Mr. J. Morley: Demonstration of Surgical Cases.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINICS.
FRIDAY, March 16th.—3.30 P.M., Mr. Brockman: Thyroid Cases.

Appointments.

BARRON, H. THOMPSON, M.D. Lond., M.R.C.P. Lond., has been appointed Assistant Physician to the Skin Department, Westminster Hospital.

GROVES, E. W. HEY, M.D., M.S. Lond., to be one of the Medical Referees under the Workmen's Compensation Act for the districts of the Bristol, Wells, Weston-super-Mare, and Yatton County Courts.

NICOL, W. W., M.B., Ch.B. Aberd., Certifying Surgeon under the Factory and Workshop Acts for the Inverurie District of the County of Aberdeen.

RUDDOCK-WEST, T., M.D., Durh., D.P.H., Medical Officer of Health for the County of Norfolk.

Vacancies.

For further information refer to the advertisement columns.

Albert Dock Hospital, Connaught-road, E.—Res. M.O. At rate of £110.

Ayr County Hospital.—Sen. and Jun. H.S.'s. At rate of £100 and £80 respectively.

Belfast, City and County Borough of.—Med. Supt. Officer of Health and Port Medical Officer. £2000.

Birmingham and Midland Ear and Throat Hospital.—Second H.S. At rate of £150.
Birmingham and Midland Homœopathic Hospital and Dispensary.—Hon. Anæsthetist and Hon. Consulting Ophth. S.
Brighton Borough Infectious Disease Hospital and Sanatorium.—Res. M.O. £350.
Cambridge, Addenbrooke's Hospital.—H.S. At rate of £130.
Charing Cross Hospital.—Surg. Reg. £150. Also Asst. Surg.
Connaught Hospital for Walthamstow, Wanstead, and Leyton, Walthamstow, E.—Hon. Radiologist. Also Sen. and Jun. Res. H.S.'s. At rate of £150 and £100 respectively.
Croydon General Hospital.—Cas. H.S. £125.
Dreadnought Hospital, Greenwich.—H.P. At rate of £110.
East London Hospital for Children and Dispensary for Women, Shadwell, E.—Asst. S.
Hereford County and City Mental Hospital.—Second Asst. M.O. £350.
Hospital for Tropical Diseases, Endsleigh-gardens, W.C.—H.P. At rate of £135.
Hospital for Women, Soho-square, W.—Res. M.O. At rate of £100.
King's College Hospital, Denmark-hill, S.E.—Two Jun. Surgeons. Also Jun. P. for Dis. of Children.
Liverpool Open-Air Hospital for Children, Leasowe.—Jun. M.O. £200.
London Homœopathic Hospital, Great Ormond-street, W.C.—Fourth Anæsthetist. £50.
Manchester, Ancoats Hospital.—Clin. Asst to Ear, Nose, and Throat Dept. 10s. 6d. per clinic.
Manchester, St. Mary's Hospitals, Whitworth-street.—Four H.S.'s. Each at rate of £50.
Montana, Switzerland, Palace Sanatorium.—Asst. Phys. £400.
Newcastle-upon-Tyne, Hospital for Sick Children.—Jun. H.S. At rate of £100. Also Res. H.P. and Res. Sen. H.S. Each at rate of £95.
Nigeria, Medical Research Institute.—Biochemist and Protozoologist. £800.
Rochdale Infirmary and Dispensary.—Jun. H.S. £200.
Royal Dental Hospital of London, 32, Leicester-square, W.C.—House Anæsthetist. £200.
Royal Northern Hospital, Holloway, N.—H.P. and Obstet. H.S. Each at rate of £70.
St. Mary's Hospital, Institute of Pathology and Research.—Research Studentship. £200.
Salford Royal Hospital.—Two H.S.'s. Each at rate of £125.
Shanghai Municipal Council.—Second Asst. Commissioner of Public Health. Taels 600 per mensem.
Sheffield Royal Infirmary.—Ophth H.S. At rate of £80.
West London Hospital, Hammersmith, W.—H.P. and two H.S.'s. Each at rate of £100. Hon. Med. Reg. £100. Also Hon. Anæsthetist.
Westminster Hospital, Broad Sanctuary, S.W.—Asst. Surg. Reg. At rate of £50.
Weston-super-Mare Hospital.—Res. M.O. £130.
Willesden General Hospital, Harlesden-road, N.W.—Res. H.S. At rate of £100.
Windsor, King Edward VII. Hospital.—Hon. Ophth. S.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Haltwhistle (Northumberland), Erith (Kent), Exeter (Devon), and at Bervie (Kincardineshire).

Births, Marriages, and Deaths.

BIRTHS.

DAY.—On Feb. 26th, to Marjorie Semple, M.B., wife of William Day, Jun., College-road, Maidstone—a son.
FISHER.—On Feb. 27th, 1928, at a nursing home, to Grace, wife of Alfred George Timbrell Fisher, *M.C.*, F.R.C.S. Eng., of 59, Montagu-square, W.1—a daughter.
GABRIEL.—On Wednesday, Feb. 29th, at Colville, Gerard-road, Barnes, the wife of W. B. Gabriel, F.R.C.S., of a son.
VINER.—On Feb. 25th, at Chorley Wood, Herts, to Mona (née de la Mare), wife of Geoffrey Viner, F.R.C.S., of 27, Queen Anne-street, W.1—a son.

MARRIAGES.

AMIES—SPEIRS.—On Feb. 27th, at St. George's Church, Croydon, Cleeve Russell Amies, M.B., B.S., M.R.C.S., L.R.C.P., D.T.M., D.T.H., Malayan Medical Service, to Muriel, daughter of Mr. and Mrs. John Speirs, of Ashburton-road, Croydon.
LEE—COSTELLO.—On Feb. 28th, at St. Thomas's Church, Stockton Heath, Warrington, Major Robert Lee, I.M.S., to Frances Maureen, daughter of the late Mr. and Mrs. John Costello, of Tipperary, Ireland.

DEATHS.

FLETCHER.—On March 3rd, at Sudbury Farm House, near Harrow, Cavendish Fletcher, M.B., B.S. Lond., M.R.C.S., L.R.C.P.
JERMAN.—On Feb. 25th, Arthur Edward Jerman, M.B., D.P.H., T.D., late Lieut.-Col., R.A.M.C., T.F., for 24 years M.O.H. of Erith and district, aged 55.
PORTER.—On Feb. 27th, at The Avenue, Beckenham, Kent, Major-General Sir Robert Porter, K.C.B., C.M.G. (late R.A.M.C.), aged 70.
RIGDEN.—On Feb. 28th, at Alumhurst-road, Bournemouth, Walter Rigden, M.D.
SICHEL.—On Wednesday, Feb. 29th, at Vine House, Sevenoaks, Gerald Theodore Silvester Sichel, F.R.C.S., late Surgeon, R.N.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

THE CONTRIBUTION OF CHRISTIAN THOUGHT TO THE SCIENCE AND PRACTICE OF MEDICINE.

An Address delivered at the Dedication of the Pillar of Healing in St. Anne's Cathedral, Belfast,*

BY HAROLD BALME, F.R.C.S. ENG., D.P.H.,
FORMERLY PROFESSOR OF SURGERY IN, AND PRESIDENT OF, THE SHANTUNG CHRISTIAN UNIVERSITY, CHINA.

The Problem of Pain.

FROM the earliest days of human life on earth, the problem of pain and sickness has challenged the thought and faith of humanity. The mysteriousness of its origin; the uncertainty of its outcome; the crippling results of its ravages—these are some of the factors which constitute the essence of the problem, and which, in all ages, and amongst all people, have led to the same unanswered questionings as to the ways of God. There has always been something so inexplicable, so baffling, so portentous, about the onset of disease, and it is little wonder that it has readily given birth to nervous dread and apprehension, and has led to every kind of superstitious practice. Totem worship and secret cult, hidden charm and magic potion, votive offering and weary pilgrimage—all bear witness to the same pathetic efforts to appease an angry spirit, to ward off some noxious influence, or to counteract some unknown and impalpable evil, thus restoring health and vigour to a loved one. It has needed the vision of an Elizabeth Browning to see that—

> "Knowledge by suffering entereth,
> And life is perfected by death."[1]

or the inspiration of John Keats—once apprenticed to a surgeon—to appreciate the necessity of a world of pains and trouble, in order, as he put it, "to school the intelligence and make it a soul."[2] It has needed the genius of a Mrs. Hamilton King to ennoble suffering as an act of worship, of fellowship, and of needed discipline, so that men could say—

> "How poor were earth if all its martyrdoms,
> If all its struggling sighs of sacrifice
> Were swept away, and all were satiate-smooth:
> If this were such a heaven of soul and sense
> As some have dreamed of—and we human still.
> Nay, we were fashioned not for perfect peace
> In this world, howsoever in the next:
> And what we win and hold is through some strife."[3]

But not many have risen to such heights. To the vast majority sickness and pain have been twin spectres of dread omen, understood by few and feared by all.

The Contribution of Greek Thought.

It is part of the glory of the golden age of Greece that the leaders of that period—those "fearless mariners on the uncharted sea of thought," as Prof. Angus calls them[4]—dared to probe into the mysteries of disease, and succeeded in lifting the science and practice of medicine on to an entirely new plane of human endeavour. Two streams of thought converged upon the problem, the one religious, the other intellectual and scientific, but each flowing in complete harmony with the other. The religious stream had its fount of origin in the ceremonies associated with the worship of the God-physician Æsculapius—reputed son of the divine Apollo and the human maiden Coronis—and found its inspiration, for the most part, in the teachings of the old mystery religions, with their emphasis upon a benevolent, though remote, Deity, their yearning for redemption, and their idealisation of a beautiful body enshrining and harmonising with a beautiful mind.

The intellectual stream was the natural product of an age which bore such acute and accurate minds as those of Herodotus and Sophocles, Thucydides and Aristophanes, Socrates and Plato—all of them, be it remembered, contemporaries of him whom we have come to speak of as the Father of Medicine, Hippocrates of Cos. Looking back, as we do to-day, after the lapse of nearly 2400 years, it is easy to fall into the mistake of regarding Hippocrates as though he were some amazing human comet, born out of due time, and flashing upon his generation a brilliance of thought and intuition of incomparable splendour. But such was not entirely the case. Great pioneer as he undoubtedly was, Hippocrates was also, on the one hand, an inheritor

* The address will be issued as a booklet by the Student Christian Movement, 32, Russell-square, London, W.C.1. Price 6d. through any bookseller.

of the trained observations of physicians like Democedes, or the generation of men who gave to Homer his accurate knowledge of anatomical detail, whilst on the other hand, he was a sharer in the intellectual stimulus of the great thinkers of his day.[5] The genius of Hippocrates lay in his power to build upon this foundation, to project into the physical sphere the same independent and fearless thinking as characterised the philosophers of his age, and thus to erect an edifice of scientific thought based upon close observation of natural processes and meticulous attention to clinical symptoms, and inspired with high idealism and lofty ethical code. In this way Hippocrates, and the school which succeeded him, made an invaluable contribution to medical progress. They delivered the investigation and treatment of disease from blind empiricism and superstitious priest-craft, they proclaimed to the world that all physical disorders were subject to natural laws, and they inspired the profession with a noble quest for ultimate truth and a lofty conception of ethical conduct.

And yet, as Sir William Osler used to remind us, although "the tap-root of modern science sinks deep into Greek soil," Hippocrates, with all his genius, did not go beyond highly trained observation and a conception of disease as a process of Nature,[6] whilst the religious thinking of the Greeks was largely pessimistic in outlook, knew nothing of conscience, nothing of a conception of the Kingdom of God, and possessed but little interest in the fate of mankind.[7]

The Coming of Jesus Christ.

It was thus to a world of mysterious suffering for which Grecian culture and piety could find no adequate solution, and to which the best religious thought of Judea had no higher interpretation to offer than that of "the fathers eating sour grapes and the children's teeth being set on edge,"[8] that the Son of Man came; and with His coming our whole conception of sickness and disease has been utterly transformed, and an entirely new motive in life provided. Christianity "lives by the glowing hope of a better world," to quote Albert Schweitzer's splendid phrase, and while Græco-Oriental mystery religions could only bid men "free themselves from the world," Jesus was telling them to get free in order to work in the world, in the spirit and in the love of God.[9]

Of the profound mystery of the Incarnation we shall never, perhaps, discover the full meaning, but one aspect of that mystery is patent to all eyes, for it lies illumined on every page of the gospel record. The Incarnation meant identification with common humanity, in all its frailty, its suffering, and its physical limitations. We see this sublime wonder in every detail of Our Lord's life among men—in the infinite tenderness with which He "bare our infirmities" and entered into the sorrows of the afflicted, as in the exquisite sympathy which compelled Him to stretch out His pure hands to touch the loathsome leper, and which made it impossible for Him to deafen His ears to the appeal of a Syrophœnician mother, or to pass, unheeded, the cry of a blind Bartimæus.

We see it anew in His solicitous care for the "little maid" whom He bade to arise from her deathbed, in His chivalrous concern for the sisters of Lazarus, in the "virtue" which goes out of Him as He heals the woman who touched the hem of His garment. But most of all we see it in His own experience of physical pain, in the bloody sweat which dropped from His brow in the night-vigil of the Garden, in the agony of martyrdom which drew from His lips those impassioned cries on the Cross of Calvary. "He shared pain," as T. R. Glover says in his "Jesus of History," "He sympathised with suffering; and His understanding of pain, and, above all, His choice of pain, taught men to reconsider it and to understand it, and altered the attitude of the world toward it."[10]

But it was not alone by His sharing of human suffering that Jesus has changed our conception of disease and pain. He did far more than this, for He brought to the world an entirely new revelation of God and of Man. Instead of a remote Deity, infinitely just and righteous, but far removed from the sorrows of humanity, Jesus Christ came to reveal a God Who was clothed with personality, a Father Whose whole being was Love, and One in Whose sight the most insignificant of His creatures possessed infinite worth. The God of Jesus was a God Who cared intensely for the welfare and happiness of His children, One Who planned for them a complete redemption of body, mind and spirit, and Who called them into the fellowship of the divinest of all services—the creation of a brotherhood of which Christ Himself should be the firstborn.[11] This was the evangel which Jesus Christ brought to the world, and it is in the inspiration of that message that numberless men and women have gone forth to lives of heroic endeavour and splendid sacrifice.

Let us now attempt to discover how far these new conceptions have affected the course of medical progress and have influenced the science and practice of medicine. We shall find traces of that influence in at least four different directions.

A New Valuation on Human Life.

In the first place, the Christian view of a God-controlled world has placed a new valuation on human life and personality, such as is found in no other religion, and it is out of this new sense of values that our hospital system, and all that is associated with the care of the sick and helpless, have sprung. "The chief glory of mediæval medicine," writes Dr. F. H. Garrison in his History, "was undoubtedly in the organisation of hospitals and sick nursing, which had its origin in the teachings of Christ. For while the germ of the hospital idea may have existed in the ancient Babylonian custom of bringing the sick into the market-place, for consultation as it were, and while the Iatreia and Asclepeia of the Greeks and Romans may have served this purpose to some extent, the spirit of antiquity towards sickness and misfortune was not one of compassion, and the credit of ministering to human suffering on an extended scale belongs to Christianity."[12]

It was during the reign of Constantine that the Asclepeia were closed, along with other temples, and it was shortly after this time that the movement to found and build hospitals sprang up—a movement in which Helena, the mother of Constantine, is said to have taken a prominent part. In the year 369 one of the first of these institutions was established at Cæsarea by St. Basil, with hospital for the sick and houses for physicians and nurses. Six years later a large hospital of 300 beds was opened at Edessa for plague-stricken patients, whilst a variety of philanthropic institutions were founded, each with its separate title, for different classes of needy and destitute sufferers. In Western Europe the first "nosokomeion"—as the ordinary hospital came to be called—was established about A.D. 400 by Fabiola, a Christian lady of Rome, its purpose being, as St. Jerome informs us, "to gather in the sick from the streets and to nurse the wretched sufferers, wasted with poverty and disease." It was the religious orders and fraternities, which were growing up in the Christian Church at this time, which founded and maintained these institutions, where, as Mrs. Hamilton King beautifully describes it:—

> "A small part only of the house served
> The brethren's needs; but all the larger rooms,
> Lofty and bare, they made their hospital,
> In which by night and day they ministered
> Unto their sick: and these were always full.
> And all of them had diligently learned
> The art of healing, and among them were
> Some surgeons and physicians much expert."[13]

From the thirteenth century onward this practice of mercy has overflowed the borders of the Christian Church, and has gradually permeated the whole of our national life so that we no longer think of hospital practice as a duty confined to religious bodies. But let us never forget that the instinct which impels men and women to-day to fly to the help of the sick and wounded, the instant response to a call of need which drove aviators and sleigh-drivers hundreds of miles last year, in the teeth of a sixty-mile-per-hour blizzard, to take antitoxin to the diphtheria patients in far Alaska, the compelling force which leads a sea captain to change his course in order to carry medical aid to some sick man on the ocean—these instincts all find their origin in the new valuation of human life and sacrifice which our Red Cross flag for ever symbolises.

Nor is this new valuation of human life confined to the physical nature of man, for the very heart of Christ's message was His insistence on the essential unity of all parts of man's being, physical, moral, and spiritual, and on the need of each for that complete redemption which He had come to bring. By its insistence on this unity, and on the influence which body, mind, and soul exerts the one upon the other, Christian thought has concentrated attention on a vital fact, the importance of which is being recognised more and more to-day by every guild of health and by every student of medico-psychology.

A New Motivation for Medical Research.

In the second place, it may fairly be claimed that the quest for truth, which, as we have seen, has come down to us as a magnificent legacy from the Grecian school of thought, has received a new connotation as a result of the life and teachings of Jesus Christ. To the man who has caught a vision of the full significance of life as Jesus saw it, or who, all unconsciously perhaps, has come under the pervading influence of His teaching, this quest becomes a veritable crusade, the end of which is not a mere discovery of hitherto unknown facts, but the forging of a new weapon with which to alleviate the sufferings of a stricken humanity. "I could shout for joy," writes Walter Reed to his wife, as he successfully concluded his important investigation of yellow fever at Panama. "The prayer that has been mine for 20 years, that I might be permitted in some way, or in some time, to alleviate human suffering, has been granted."[14]

It is a thrilling story, this patient search for the causation and cure of disease. "To wrest from nature the secrets

which have perplexed philosophers in all ages, to track to their sources the causes of disease, to correlate the vast stores of knowledge that they may be quickly available for the prevention and cure of disease—these are our ambitions," declares Osler in one of his noblest addresses,[15] and in these apt words he gives us the life-history of that splendid corps of scientific investigators to whom the whole world stands debtor to-day. William Harvey, the man who avowed himself "the partisan of truth alone," diligently tracing out the circulation of the blood; old Antony Leeuwenhoek, the Dutch draper, grinding the first lenses which revealed the existence of micro-organisms, and paving the way for the brilliant achievements of a Louis Pasteur in France, a Joseph Lister in Britain, a Robert Koch in Germany; Humphry Davy and Horace Wells, Morton, Jackson, and our own great-hearted James Simpson, all sharing in the discovery of anæsthetics, those God-given drugs which enable the surgeon of to-day, in Weir Mitchell's immortal phrase, "with God-like will to decree the death of pain"[16]; Laveran, finding the malaria parasite, and Manson and Ross and Grassi, after infinite labour, completing the whole story of malarial infection and its cure; Castellani and Sambon performing the same service in the case of sleeping sickness; Carroll and Lazear, Reed and Gorgas, ridding the world of its fear of yellow fever, as Jenner had rid it of the peril of small-pox; James Mackenzie, working in humble obscurity for 20 long years at those laborious researches which have revolutionised our knowledge of cardiac disease; Ehrlich, that great plodding genius, adding experiment to experiment until he presents humanity with a means for destroying pathogenic spirochætes.

So might we continue, for the tale is not half told of the men and women whom the profession loves to honour, to say nothing of that still larger army of "silent workers who, often unknown and neglected by their generation, kept alive the fires on the altars of science, and have so opened the doors of knowledge that we now know the laws of health and disease."[17]

An Inspiration to Heroic Service.

In the third place, may we not say that the tradition which has come down to us from the sacrificial life of Jesus Christ has been one of the most potent factors in inspiring men and women to undertake hazardous and devoted acts of service for their fellows, with utter disregard of personal danger? The roll of honour of the medical profession, and of its sister-profession of nursing, is a record of which we may well feel proud, including, as it does, not only the names of those who have actually given up their lives in the pursuit of science and the service of humanity, but also of hundreds more who "jeoparded their lives unto the death in the high places of the field."[18]

Emblazoned on that roll are the names of scores of scientists who gladly risked life and health and reputation in the course of their research—Haffkine, inoculating himself with his own plague and cholera vaccines before he would risk the lives of others; Carroll and Lazear, submitting to the bites of the venomous yellow fever-bearing mosquitoes (an act which cost Lazear his life); Prowazek, the Russian investigator, perishing of typhus fever from the bite of an affected louse; Thuillier, of the French Commission, carried off by cholera in the midst of his investigation into the terrible epidemic of 1883; Joseph Dutton, dying on the Congo whilst tracking the causation of sleeping sickness. We think also of the sublime moral courage of Pasteur, as he staked his great scientific reputation on the success of those experiments which were to mean so much to a suffering world; of Lister, with "faultless patience and unyielding will"[19] calmly facing ostracism and ridicule in his fight for the mastery of sepsis; of Hall Edwards and Blacker, of Bergonié and the scores of other physicians and scientists who have suffered the loss of limbs or of life itself whilst experimenting with the all-powerful Rontgen rays.

And what shall we say of the men and women who have risked their all in the common service of suffering humanity—of David Livingstone, shaking with fever as he tramped through the African jungle; of Pennell, dying with septicæmia in the attempt to save the life of a beggar on the Afghan frontier; of Wilfrid Grenfell, battling with Arctic storms on the Labrador coast; of Elsie Inglis, dying of sheer exhaustion after her magnificent service to the stricken Serbians; of Edward Wilson, Scott's "best of comrades and staunchest of friends" on the immortal South Pole Expedition; of Albert Schweitzer, gladly surrendering a world-wide reputation as theologian and musician in order to succour the dwellers in the primeval forest; of Father Damien and Arthur Jackson; of Florence Nightingale and Edith Cavell? And what of that gallant company of surgeons and nurses of all nationalities who performed incredible feats of valour and of endurance as they tended the wounded during the Great War? The line of medical and scientific heroes in the cause of humanity has never been broken, and as we bow our heads in reverent memory of those who willingly gave up their lives in this royal service, we can use no more fitting words than those of the great epic of the eleventh of Hebrews: "These all died in faith, not having received the promises, but having seen them afar off. . . . Of whom the world was not worthy"

A Compelling Sense of Trusteeship.

But there is a fourth contribution which Christian thought has made to the science and practice of medicine, and one which is perhaps the greatest of all. It is the conviction of trusteeship which characterises every true scientist and physician and nurse, both with regard to the knowledge which they have acquired by individual effort, and also the ability to alleviate suffering and cure disease which training and experience have placed in their hands.

We have only to look round the world to-day, and especially those portions of it which have not yet come under the dominance of Christian teaching, to realise how much we owe, in our public life and in our social relationships, to this essentially Christian conception. In every act of Our Lord's crowded days, as well as in the profound lessons which He gave to His followers, we find repeated emphasis on this divine view of life. It forms the central theme of the symphonic music of Christ's last recorded parables—those striking word-pictures of the Ten Virgins, the Talents, and the Sheep and Goats. The failure of the maidens who had no oil in their vessels, of the steward who so carefully wrapped up his master's talent in a secure place of concealment, of the respectable company who were not interested in philanthropic efforts—what was it but an essential failure in trusteeship; for the lamps were entrusted to them for the purpose of shedding light in the dark watches of the night, the talent was intended for investment and profit, whilst the hungry and naked, the sick and imprisoned, whom the busy passed so heedlessly by, were no other than the little brothers of Our Lord.

To the medical and nursing professions there has been given, in no ordinary measure, this conviction of trusteeship, largely as a result of the influence of Christian thought, and never perhaps has this been acknowledged in more beautiful or adequate language than that employed by him whom we love to call the Father of British Clinical Medicine, the great Puritan doctor, Thomas Sydenham. Writing in 1666—the year preceding the publication of Milton's "Paradise Lost"—Sydenham prefaces the first edition of his monumental work on "The Cure of Fevers" with these noble words—his "*religio medici*," as Sir George Newman calls it:—

> "Whoever applies himself to medicine should seriously weigh the following considerations: first, that he will one day have to render an account to the Supreme Judge of the lives of sick persons committed to his care. Next, whatever skill or knowledge he may, by the divine favour, become possessed of, should be devoted above all things to the glory of God, and the welfare of the human race. Moreover, let him remember that it is not any base or despicable creature of which he has undertaken the care. For the only-begotten Son of God, by becoming man, recognised the value of the human race, and ennobled by His own dignity the nature He assumed."[20]

Thus, throughout the ages, as we trace the whole wonderful story of medical progress, we see, in countless ways, the pervading influence of the Divine Son of Man; and though we readily acknowledge that many of those to whom we owe unbounded gratitude for their magnificent contributions to the march of science would hesitate to claim for themselves the title of Christian, we cannot fail to see, in their lives and in their character, the reflection of Him Who came not to be ministered unto but to minister, and to give His life a ransom for many.

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MATERNAL MORTALITY.

AT a conference held at the Central Hall, Westminster, on Feb. 28th, under the presidency of Dame Edith Lyttleton, a message was read from the Queen, expressing her concern at the continued high maternal mortality-rate and her conviction that concerted action should be taken. The following resolution was afterwards proposed from the chair and carried unanimously:—

This meeting recommends: That steps should be taken to obtain a medical inquiry into every maternal death due to childbirth; that the attention of the authorities responsible for the education of medical students should be drawn to the need for further training and experience in midwifery as a preliminary to general practice in medicine; that an official committee should be set up to advise upon the whole question of the training and employment of midwives; that action should be taken in every area to induce all local authorities to make their maternity services adequate; and that the provisions of the National Health Insurance Acts should be readjusted and extended so that medical and midwifery services should be available for mothers both for antenatal care and during and after confinement.

Dr. J. S. Fairbairn, during the discussion, said he would have preferred a greater degree of emphasis on the need for research which he regarded as the crux of the whole matter. Puerperal fever was the cause of at least one-third of all deaths connected with childbirth, and there were many points about it which were still obscure—how far it was due to infection already in the woman herself, in how many cases it was carried to her by the attendant, how resistance varied in different patients and in the same patient at different times, and so on. He set great value on midwifery as the foundation of a good maternity service. In all branches of medicine the first object was to secure natural function, and the midwife has an important share in promoting natural childbirth. The women themselves should be made to realise that there was a price to be paid for shortening their time of trial. Morbidity increased where interference with the course of Nature was practised. Great advances had been made in the training of midwives, and Dr. Fairbairn specially commended those cities, such as Newcastle, Birmingham, and Leeds, in which the Universities had taken it up. This gave the students the great advantage of having specialist lecturers and demonstrators instead of being dependent on one or two teachers for their whole course.

The importance of research was again dwelt upon by Dr. Ethel Bentham, but she urged that research should cover not only the circumstances of confinement, but the whole surroundings of the woman. There were two unfortunate gaps in the health service, one between the ages of 14 and 16, and the other at the early part of married life. During a period of 12 years' work at antenatal clinics Dr. Bentham had seldom seen a perfectly healthy young woman among those who came for examination.

Several speakers pleaded for better training of medical students. One or two who had had experience of country districts pointed out that it was no good telling the women they ought to have antenatal care if the local practitioners were either incompetent or unwilling to give it, and that antenatal clinics, specialist care, and hospital accommodation were alike worthless unless the local doctors were ready to avail themselves of the facilities offered.

MAJORCA AS A HEALTH RESORT.

To the Editor of THE LANCET.

SIR,—For some years past the number of foreigners coming to Majorca has been increasing. While many of these are tourists of the variety who wish to "do" the island in so short a time, and with so little fatigue to body and brain as possible, many stay for the winter months and a good number are invalids, sent out by doctors from more inclement regions to enjoy our equable climate, where during the winter the temperature is very rarely below the freezing-point, it never snows, and there are few rainy days. I wish to draw attention to a few of the conditions for which this island is suitable and to a few for which it is not as a rule desirable.

It has already been pointed out by medical writers that Majorca is peculiarly good for cases of arthritis, sciatica, gout, and the various ailments vaguely termed rheumatism. For all such ailments a dry sunny climate, such as we enjoy here, is almost invariably very beneficial. Sea-bathing can be indulged in, even by invalids, from April onwards, and is often extremely useful as an adjunct to open air and sun treatment. The island has a reputation, many centuries old, for being a good place for asthma, and, though not always suited to all cases, many of these patients do well, and bronchitics nearly always improve. On the other hand, the climate frequently does not suit cases of pulmonary tuberculosis, quite apart from the fatigue of the long journey and the inadvisability of sending such patients a long way from home. Patients who suffer from dyspepsia, gastritis, or other digestive troubles, if they intend to make a long stay, should take a house or flat, as Spanish food is apt to disagree with English people. Mallorquin cooks soon pick up English methods of cooking, and as a rule they cook well. For sufferers from habitual constipation this island is excellent; we have abundant supplies of good fruit and vegetables all the year round, much of the cooking is done in oil (our olives are famous), and in addition to these aids to evacuation there is hardly a day when it is not possible to take exercise, not only in the open air but in sunshine.

Palma itself is not a good place for organic heart affections; there are not many flat walks: there are no gardens or public parks to walk or sit in, and the patient who is unequal to walking up hill does not get much exercise. The bays of Pollensa and Alcudia give plenty of scope for walking on the flat, as well as for boating and sea-fishing, and there are hotels at both these places.

The climate of Majorca, the clearness of the air, the wonderful beauty of much of the sea coast, all make it an exceptionally good seaside place for a winter rest-cure for those to whom a winter in England means a period of staying indoors, if not actually ill, at least unable to brave the rigours of fog, snow, and east winds.

I am, Sir, yours faithfully,

P. GIMÉNEZ OLIVEROS.

Palma, Majorca, Feb. 19th, 1928.

NEW PREPARATIONS.

Magnolax Brand (Wampole) is an emulsion of the liquid paraffin of the British Pharmacopœia and of hydrate of magnesia; it contains no addition of laxative drug, sugar, or alcohol, and its action is to maintain easy and thorough evacuations. The preparation is made in Canada by Messrs. H. K. Wampole Company, of Perth, Ontario, and is distributed through Newbery's Agency, 31-33, Banner-street, London, E.C. Not being absorbed at all, it is regarded as safe in all circumstances, an interesting claim being supported for its value as a laxative in pregnancy, where the doses must be regulated by the physician in charge.

Felsol is a colourless crystalline powder, acid in reaction, and easily dissolved in warm water. It is put on the market by the British Felsol Co., Ltd., 29, Red Lion-square, London, W.C., who have obtained considerable direct evidence from British practitioners of its value in the treatment of bronchial asthma and chronic bronchitis. It contains iodopyrin, antipyrin, and caffeine, and is supplied in powders whose contents are regulated so that one, or perhaps two, powders are generally required to check the asthmatic attack, it being suggested that the second powder should not be given till after an interval of two or three hours. The remedy can be taken in gradually decreasing doses as the patient recovers, and the doses can be increased where the condition is severe or obstinate; but instructions accompanying the powders give the wise warning that all such general directions are subject to special prescription by the doctor in attendance. We learn that nine special and general hospitals, two of them being well known and large London institutions, have made successful trial of the preparation.

CARE OF DUBLIN SCHOOL-CHILDREN.

Dr. Mary O'Leary, one of the recently appointed medical inspectors of school-children for the city of Dublin, has been giving to a newspaper representative a description of her work and some of her first impressions. She said that there was a three-fold object in the work: (1) to discover diseases and defects in school-children, (2) to arrange for the cure or correction of these, and (3) to prevent disease. The last was the most important of the three. In the two months during which the two inspectors had been at work 3000 children had been examined. Of these 80 per cent. had some defect, most of which could have been prevented. Ten per cent. had eye trouble and 60 per cent. decayed teeth. Children with minor deformities, such as rounded shoulders, curvatures due to faulty position, and mouth-breathers and stammerers were taught simple exercises for the correction of these defects. During each child's examination a simple health talk, suitable to the child, was given. A list of "backward" children was being made, and it was hoped that in time special classes could be formed for them in which manual instruction could be given, and the children, even if remaining almost illiterate, might be made self-supporting. The children were examined in three groups: (1) entrants, 5 to 6 years; (2) intermediates, 8–9; (3) leavers, over 12. In this way every child would be examined three times during his school life.

AN AID TO DEFÆCATION.

Dr. E. P. LEAVY (Innisfail, Queensland) writes: Of the many "urges" known to the constipated might I suggest a final psychic one after the failure of the varying "Walcher positions"—viz., the crushing and rolling effects of paper preparatory to its use.